

RADIATION EXPOSURE COMPENSATION ACT OF 1981—Part 2

HEARING BEFORE THE COMMITTEE ON LABOR AND HUMAN RESOURCES UNITED STATES SENATE NINETY-SEVENTH CONGRESS SECOND SESSION ON S. 1483

**TO AMEND TITLE 28 OF THE UNITED STATES CODE TO MAKE
THE UNITED STATES LIABLE FOR DAMAGES TO CERTAIN IN-
DIVIDUALS, TO CERTAIN URANIUM MINERS, AND TO CERTAIN
SHEEP HERDS, DUE TO CERTAIN NUCLEAR TESTS AT THE
NEVADA TEST SITE OR EMPLOYMENT IN A URANIUM MINE,
AND FOR OTHER PURPOSES**

SALT LAKE CITY, UTAH

APRIL 8, 1982



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RADIATION EXPOSURE COMPENSATION ACT OF 1981—PART 2

THURSDAY, APRIL 8, 1982

U.S. SENATE,
COMMITTEE ON LABOR AND HUMAN RESOURCES,
Salt Lake City, Utah.

The committee met, pursuant to notice, at 9:30 a.m., at the Salt Palace, Salt Lake City, Utah, Senator Orrin G. Hatch (chairman of the committee) presiding.

Present: Senator Hatch.

Also present: Representative Marriott.

OPENING STATEMENT OF SENATOR HATCH

The CHAIRMAN. We will call the Labor and Human Resources Committee to order.

In less than 2 weeks from today, on April 20, the Senate Committee on Labor and Human Resources will vote on S. 1483, legislation to establish a proper legal remedy for those citizens believed to be victimized by the radioactive fallout from atmospheric nuclear bomb testing conducted between 20 and 30 years ago at the Nevada test site.

The Agency Administration Subcommittee of the U.S. Committee on the Judiciary will vote on S. 1483 on April 29. This Senate committee action comes just a little more than 3 years after the first congressional hearings on the issue.

Three years ago on the 19th of April—right here in the Salt Palace—three committees of the U.S. Congress opened hearings on the health effects of the Nevada atmospheric nuclear testing program. It has been a long, hard road, but we have come a long way.

From the beginning, the evidence of harm was overwhelming. The 1979 hearings have been recorded into fat volumes that provide ample proof that: one, it is likely that a number of people developed cancer as a result of the fallout; two, that the Federal Government had not provided adequate warning or protection to these people; and, three, that current law does not give citizens the adequate means to right these wrongs. The facts revealed at these hearings cried out for congressional action.

But, determining the nature of this action has proven to be an extraordinarily difficult task because the harm done by radiation is less than obvious. Radiation despoils and kills silently and capriciously, usually doing so years after exposure. Ionizing radiation causes cancer. But, not everyone who is exposed to the lower levels of radiation develops cancer, and scientists conclude that most

people do not. When radiation does cause cancer, it does so invisibly. The cancer appears only years later, and, when it does appear, it is indistinguishable from cancer developed from other causes.

Put differently, when doctors examine a person with cancer, they cannot tell whether radiation caused the cancer, even though careful study of populations has shown that radiation does cause cancer in people.

So, how are the courts to know whether a person's cancer was actually caused by the fallout? The current law, the Federal Tort Claims Act, provides no answer to this question. Solving this dilemma has been the hardest part of our task.

Without a method of directing compensation exclusively to people with the most "watertight" cases, we risk establishing a high-cost boondoggle. Some of the people writing to me on radiation compensation have expressed just this type of fear. I assured them, as I assure you here today, that I share the common commitment to prevent such boondoggles from spreading wherever they begin to grow. I also believe that we can do so, and yet honor our promise to provide recourse and remedy for those radiation victims whose plights have been far too long neglected.

However, if in this legislation we develop a method of judging fairly the claims of the victims of the Nevada fallout, this method can also be used to provide justice to radiation victims everywhere—to uranium miners, from whom we shall hear today; to workers in the nuclear power industry; and to both the military and the civilian personnel throughout the U.S. nuclear population and weapons programs. Because of these momentous implications, several representatives of U.S. Federal agencies have suggested that we should give up this attempt, or at the very least wait a few years for further scientific study.

My answer to these officials is that justice must be served, and that people have waited too long already for a proper remedy. I suggest that the legislation on which today's meeting is focused is specifically designed for the victims of the Nevada atmospheric nuclear bomb tests so that it can resolve the problem at hand. As far as the other radiation liability cases are concerned, the remedy this legislation establishes can serve as a demonstration project.

Our search for a proper remedy has been long and arduous. There were many frustrations along the way. However, during the initial hearing on S. 1483 last fall, Dr. Victor Bond, representing the National Council on Radiation Protection and Measurement, described a radioepidemiological approach which, after several months of hard work to refine the concept, has become the main-spring of my final legislation which will be voted on later this month.

This method uses the science of radioepidemiology to determine the probability that a person developed cancer as a result of his exposure to the Nevada fallout. Eligibility for compensation is based on the size of a person's "probability of causation" so that compensation will be given to the people most likely to have developed cancer from the fallout. The legislation gives people a strong benefit of the doubt without opening the floodgates to undeserving claimants.

The radioepidemiological approach was reviewed on March 12 at a joint hearing conducted by the Senate Labor and Human Resources Committee and the Agency Administration Subcommittee of the Judiciary Committee. During this hearing, representatives of the scientific community testified that typing compensation to the probability that a person was harmed by the fallout is not only a workable method, but also the best method available for judging the merits of individual cases. Representatives of the Department of Defense, the Department of Energy, and the Department of Health and Human Services agreed with scientists that the radioepidemiological approach is the best available. As a result, I believe the Senate as a whole will become persuaded of the merits of the legislation.

Another reason I am confident is the broadly based and bipartisan makeup of the coalition backing this legislation. When I introduced S. 1483, 15 other Senators asked me to add them as original cosponsors. They are Senators Kennedy, Garn, Cannon, Laxalt, DeConcini, Randolph, Inouye, Hawkins, Metzenbaum, Pell, Hatfield, Matsunaga, Moynihan, Denton, and Mathias.

Throughout the development of this bill, my office has consulted with the staffs of these Senators on our legislative process. In addition, Senator Grassley, whose Agency Administration Subcommittee also has jurisdiction over S. 1483, has been most supportive up to now. In the House, just last week, Representative Marriott, who is with us this morning—and I am very happy about that—introduced a companion bill to S. 1483.

Beyond the Congress, many citizens' groups have helped our effort. We shall be hearing from several of them this morning.

Governor List and Governor Matheson both have been strong and effective advocates for providing justice to fallout victims. I am grateful to our Governor and, Bob List, I am grateful to you as Governor of Nevada. Both of you have been great leaders in this cause.

I also am very grateful to Dan Marriott because he is our leader in the House. I have a lot of confidence that together we will have every shot at getting this bill through.

Let me say that, yet, despite this evidence of substantial progress, final passage of our bill could still be ambushed by the uncertainties of this legislative year. Much work remains to be done by everyone involved.

Before beginning with today's first witness, I would like to make one comment on the need for a comprehensive scientific evaluation of the effects of the Nevada test site atmospheric nuclear bomb testing program. During the Carter administration, the Federal Government promised the University of Utah full funding for such a comprehensive review. We have all been waiting, but, after all the passing clouds of promises, this funding has only partially arrived.

Yet, this research is important not only to the people of Arizona, Nevada, and Utah who lived in the shadow of the tests, but also to the entire Nation. Here is an opportunity to study the patterns of radioactive fallout from an extensive series of nuclear blasts and the health effects of these blasts. These tests ended more than two

decades ago, and, if we don't get going soon, it will be too late for any productive research.

Since before the Reagan administration took office, I have worked to convince the National Cancer Institute to provide the needed funding. Finally, in January, \$2.3 million was allocated, only a third of what is needed. I have petitioned Secretary Schweiker both formally and informally for the remaining funds. In addition, I have written to both Secretary Edwards of the Department of Energy and Secretary Weinberger of the Department of Defense.

My staff and I have worked closely with these Federal departments in the course of developing S. 1483 and have become well acquainted with the top health experts in both Federal agencies. With their help and our continuing persistence, I am sure we will finally get the full funding so needed for this critical undertaking.

Dr. Charles Mays of the University of Utah is here today to speak on S. 1483, and he may wish to speak on the University's research plans, in addition to his testimony. I am also honored by the presence of Dr. Mays here this morning, along with the other equally distinguished witnesses.

I was taught at a very young age that justice is truth in action. Justice is certainly the sum of everything a bipartisan group of us have been working to see rendered, and it is the purpose of today's hearing to help all of us in its pursuit.

I have a letter from Assistant Secretary for Health, Ed Brandt, Jr., from the Department of Health and Human Services, dated April 5 of this year, to me as chairman of the Labor and Human Resources Committee.

It states:

DEAR MR. CHAIRMAN: At the March 12th hearing on the Atomic Bomb Fallout Compensation Act of 1982, you asked if our Department would begin to develop the radioepidemiologic tables as described in your proposed legislation. I have requested the staff of the National Institutes of Health to begin work on the necessary plans for developing such tables and will keep you informed of our progress.

Thank you again for the opportunity to appear before your committee to present the views of the Department.

I would also like to acknowledge that Wes Clark of Senator Kennedy's staff is here assisting us in these hearings. We are very grateful to him and to Ted Kennedy for helping us in this matter.

We will now turn to Congressman Marriott for his statement, and then we will call on our two Governors.

STATEMENT OF HON. DAN MARRIOTT, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF UTAH

Mr. MARRIOTT. Thank you, Senator Hatch. It is a pleasure for me to be here today and to take part in these hearings, which I hope will focus attention of the public and the Congress as to the severity of this problem.

In 1979, hearings before the House Committee on Interstate and Foreign Commerce provided the most comprehensive public record to date on the long-term negative effects of the atmospheric nuclear testing. These tests were conducted by the Department of Defense and monitored by the Atomic Energy Commission during the 1950's.

I congratulate you, Senator Hatch, on this addition to the public record and also on the hearings that you held last fall. Furthermore, I congratulate you on developing a very good bill, a bill I think ought to pass both the House and the Senate. If it does pass the Senate, it will be largely through your efforts.

During the past few years, as you mentioned, I have also been interested in this problem of the injustice to our citizens in southern Utah. I have introduced a bill in the House similar to the one in the Senate. It enables those who have most likely received their cancer from exposure to radiation fallout to be compensated by the courts.

It also requires the Secretary of Energy to develop and publish a map or chart which carefully delineates by geographic area what the environmental exposure levels were following those tests. We call those radiation zones. My intent here is to provide some readily available compilation of the data giving an objective measure of the radioactivity in the air during that time. Using this formula, the difficult process of determining individual dose levels can be made easier.

The bill I have introduced as a companion to Orrin's bill has been given to the House Committee on the Judiciary. I look forward to having favorable action taken this year in the form of hearings. I am optimistic that hopefully by the spring of next year, if all goes well, we can in fact have legislation.

Between 1951 and 1962, there were 323 aboveground nuclear tests blasts. At least three of these sent significant radioactive fallout clouds across Nevada, southern Utah, and parts of Arizona. This was not an unpopulated area. There were at least 170,000 people living there. Not every small town or isolated dwelling was monitored, so we are probably talking about an even larger population group which breathed the air, drank the milk, and ate the beef contaminated by the radioisotopes deposited on the ground and ingested by the cows.

During the 11 years of testing, the Government not only failed to advise these patriotic citizens of the health hazards posed by the fallout, the Government repeatedly said there was no hazard at all. It continued this line even after thousands of sheep died in 1953 following two particularly lethal test shots. This failure to revise its opinion and undertake protective measures constitutes, in my opinion, the grossest violation of civil rights. Cloaked in a cold war mentality that somehow justified any risk, the Federal Government played on the patriotism and trust of our citizens. The Federal Government must now pay the price for that kind of abuse, and the paying of that price is long overdue.

The nuclear testing in Nevada occurred as long ago as 30 years. Many of its original victims are no longer survivors, and their families are now left to cope with the loss and suffering. The incidence of cancer in the areas subjected to fallout is extraordinarily high. For instance, the death rate for childhood leukemia tripled between 1951 and 1967. Cancer of the thyroid is also overly abundant, corresponding to the new reports of extremely high radiation doses to the thyroid gland.

One southern Utahian I know lost his wife and nine other close family members to cancer. Under normal circumstances, this is a

statistical improbability, but the situation in southern Utah is not normal.

A woman from St. George lost her rancher husband to cancer in 1963. Much of his time was spent outdoors during those nuclear blasts. The same woman lost her daughter to acute leukemia in 1956, her mother to cancer in 1966, and her rancher brother-in-law also to leukemia. Furthermore, three friends of her brother-in-law also died of the same disease.

Within a 200-yard radius of a particular home in Cedar City, 13 persons died of cancer, 7 of them by leukemia. Of four men who watched on horseback as a fallout cloud passed overhead, depositing its ashes, three have died of cancer, one of them of leukemia. The stories go on and on and on.

None of this is a natural phenomenon. The price of testing to these families was their health and, in many instances, their lives. Their reward was an obstructionist government, unwilling to release important information bearing on dose levels until it was required to do so by the Freedom of Information Act.

Even now, there are those in Government who would seek to deny the overwhelming living evidence that something extraordinary took place in southern Utah and Nevada. I am thinking of the recent study released by Drs. Krey and Beck, two physicists with the Department of Energy. Their findings, based on the measurement of cesium still remaining in the soil, concluded that radiation doses from the fallout were too low to have caused cancer.

I believe these gentlemen should reevaluate their work. Their findings do not square with other credible studies being completed or with some of the results achieved by the current DOE dose assessment group. Their conclusions offer no explanation for the extremely high incidence of cancer throughout a region that sports a lifestyle devoid of those activities normally associated with higher cancer risks.

The result of such Government denial and delay has been to breed mistrust and suspicion among victims and their families. At least 1,000 court cases are now pending for resolution.

It is time, Mr. Chairman, to heal the wounds and alleviate the suffering. I firmly believe these two bills now before the Senate and the House are the first step in solving that problem. They relieve the problem of determining absolute direct causation by enabling the courts to use radioepidemiological evidence. Since a radiation-caused cancer and a naturally occurring cancer are clinically identical, compensation will be based on the probability of causation and will be scaled accordingly.

The bills assist the plaintiffs in gaining access to data and information in Federal agency possession, making it possible for the Government to reverse itself now and become a help rather than a hindrance.

I sincerely urge the Senate to consider the testimony here today by ourselves and all the witnesses as well as by our distinguished Governors, and to carefully examine the extensive records available on what the fallout did to our citizens. Following such consideration, I urge the Senate to pass S. 1483, which proposes a reasonable solution to this problem.

I might add in conclusion that the compensation level in these bills is very fair. They provide benefits graded for probability of occurrence. When you look at the fact that it is very difficult to put a value on human life or even on human health, I think the price the Government would pay under these bills would be far less than it would pay if it went to court, and this thing were extended out over a long period of time.

Again, Senator Hatch, I congratulate you on your efforts in bringing this bill forward and for your good work in the Senate. I support you in all these activities.

The CHAIRMAN. Thank you, Congressman Marriott.

It is, indeed, a great pleasure to introduce two distinguished Governors at our hearing this morning: Governor List of Nevada and our own Governor Matheson of Utah.

First, I would like to welcome you to our committee, Governor List. Inasmuch as your great State of Nevada actually hosted the atmospheric nuclear test, I look forward to hearing your comments concerning this legislation, which affects the citizens of both of our States.

As soon as Governor List is finished, I want to thank you, Governor Matheson, for joining with us here today.

Both of us participated in those first hearings 3 years ago. The materials that you and your staff provided at those hearings were indispensable in establishing the necessity for a legislative remedy. Therefore, I am sure you both agree that this issue before us today is one that has to be resolved.

I hope you will join with us to further this legislation that will allow a proper legal remedy for those persons who were victimized by the nuclear testing program of the fifties and early sixties.

Governor List, we will begin with you.

STATEMENT OF HON. ROBERT LIST, GOVERNOR OF THE STATE OF NEVADA

Governor List. Thank you very much, Senator Hatch and Congressman Marriott.

It is a real pleasure, an honor, and a privilege for me to be here today and have an opportunity to represent the people of my State on this occasion.

I appear on behalf of Senate bill 1483, the Radiation Exposure Compensation Act.

As you indicate, the State of Nevada is no stranger in the nuclear arena. Many of us can still recall the excitement in the 1950's of that bright first flash in our early morning skies, as we witnessed the dawn of the nuclear age that now has had such an influence on this entire planet.

The aboveground testing of the atomic bomb marked a time, we thought in those days, of adventure, a time of participation, and, frankly, a time of pride as Nevada took part in shaping the Nation's destiny as a world leader in a new era.

My father, who has been a pilot for almost 50 years, was one of the hundreds of Nevadans who volunteered his time and his expertise as a pilot, as a matter of fact, to participate in that bold experiment as a volunteer.

Little did any of us realize, as that new age dawned over the west, that 30 years later the beginning of the nuclear age would bring with it a cloud of doom for many of our citizens.

In the years since those first atomic bomb tests in the Nevada desert, our State has been called upon again and again to bear the burden of our Nation's nuclear growth and development. The Nevada test site still serves as the primary location for below ground nuclear weapons testing programs.

The Beatty, Nev., low level commercial nuclear waste site, which is one of only three operating in the country, has received nuclear waste shipments from throughout the country for more than 19 years. As a result, it contains some very dangerous and highly radioactive substances.

Now, Nevada, along with Utah, is under consideration by the Federal Government as a possible site for the first high level nuclear waste repository in the Nation.

Certain pilot programs and testing projects involving retrievable storage of those same high level waste materials are currently taking place at that same Nevada test site. It was the site for the programs which today are under review here.

Since the early days of aboveground tests in the 1950's, there have been problems in Nevada. Throughout that time, there have been stories circulating of abnormalities of animals, plants, and people who have been on the scene and who have been caught in the fallout of those explosions.

Frankly, Federal officials seemed all too quick to discount those stories as rumor or, when physical evidence actually existed, simply as coincidence.

Shortly after I took office in January 1979, I became convinced that hard evidence does exist to show that the aboveground tests had resulted in adverse effects on human beings. It was at that time that Governor Matheson and myself, along with Governor Babitt of Arizona, proposed the grant study to look at the health effects of that fallout.

For whatever reason, the Federal Government refused to recognize or even, frankly, to allow anybody else to truly and thoroughly investigate the radiation exposure problems. It seems that somewhere along the line it was decided that the public need not know the full truth. As a result, an abcess of inertia developed at the Federal level.

In February 1979 we formed a tristate committee between our three States to look at the effects of radiation in an effort to bring about, for all to see, the full story. That effort at the State level did capture Washington's attention initially.

Today that committee is still discussing how the Federal Government, after some three decades of continuing silence, can face up to its responsibilities to our citizens.

Let me say at this point that I support the proposed legislation, perhaps with some minor modifications, as it is written.

As you consider this measure, I would like to share with you this morning what it is that our committee on radiation and its effects has discovered in our own relatively feeble way.

During the 1950's and the early 1960's, while the aboveground tests were underway, and the Nation was caught in a cold war con-

frontation with the Soviet Union, the citizens of Nevada, Arizona, and Utah stood ready and willing to do our part to strengthen this Nation's defense and to preserve our freedom.

We believed that the testing program was essential to the national security. Frankly, we were willing to accept the responsibility to insure that America would remain strong.

However, those citizens who so willingly assumed that responsibility were not properly warned and not properly protected from the dangers of the test. They were unknowingly exposed to significant levels of radiation fallout. Up until now, their claims for compensation frankly have fallen on deaf ears.

That same Government that asked so much of these citizens during the testing era has continually refused to acknowledge or to accept the responsibility for the tragic consequences that the testing program has forced upon them and upon their families.

I would like to share some of the highlights of statements made by Nevadans and Utahans who have been victims of the testing program conducted at the Nevada test site.

All of the witnesses attested to the lack of notice given them by the Federal Government regarding the actual detonation times and the potential health risks associated with radiation exposure that followed.

Testifying in his regard, Mr. Cuba Lyle had this to say:

" * * * We were never warned * * *. Only, sometimes over the radio they'd tell us that there was going to be a blast * * *. One time I can remember, they had the children stay inside; but, other than that, they gave us no warning of any kind.

Mr. Elmer Pickett, concurring with this statement, testified:

" * * * I feel that we were totally misled in the information the AEC gave us as to the dangers involved. We were led to believe * * * that there was no danger.

Once * * * they asked us to stay indoors; but the majority of the people did not hear that warning—broadcast over the radio * * *. Other than that, I recall no instance that we were given any type of indication of any danger.

Sharing these feelings, Mrs. Martha Laird said this:

" * * * At no time were we ever called upon or talked to or told about the effects of radiation, what it could do to us or anything else, and there is only once that I ever received a notice from the Government that they were going to set a bomb off, and that was in 1958 after we had sold the ranch and moved to Carson City.

Mrs. Laird testified that she felt "used" by the Government, like a forgotten guinea pig. But, as she stated:

" * * * At least with guinea pigs, they will come to the cage and check. To this day, they have never checked anyone in my family or anyone that I know of from the fallout of these bombs.

In addition, the workers and the families of workers who were on the test site during that aboveground testing, and more recently the underground testing, have been unable to obtain adequate compensation for illnesses resulting from their work.

The history of the early nuclear weapons testing program is full of incidents involving the exposure of hundreds of military personnel and civilians to radioactive fallout.

Our recent experience with the proposed deployment of the MX missile system in Nevada has taught us several lessons. One of the most important was that the combined efforts of States and individual citizens can, and will, show the Federal Government errors

in planning processes and may be successful in causing those plans and decisions to be altered.

An error in judgment must be recognized in the early nuclear testing program.³ Past mistakes made in not warning or protecting the downwind citizens during the aboveground nuclear testing era simply have to be acknowledged. This is Congress' way of acknowledging that—if this bill passes. That is the essence of this legislation.

It is essential that this bill, or a similar version, be approved—extending to these citizens the benefit of the doubt regarding their claims and thereby restoring their faith and confidence in a Government that can and should act responsibly. The burden of proof should rest with the Federal Government.

In conclusion, I would like to point out that these citizens have waited and lived with the aftereffects on themselves and their families now for some 30 long years. They have acted with trusting patriotism and expected the Government, in turn, to protect their health and safety.

The people of Nevada, Arizona, and Utah accepted their role and responsibility in the nuclear age with honor, dignity, and patriotism. Frankly, they have pulled their shift, and certainly have done more than their share. Some have made tremendous personal sacrifices. They should be compensated, as provided in this legislation, by the Government that they trusted to protect them. It is time the Government made good on that trust.

Thank you very much.

The CHAIRMAN. Thank you, Governor. We are grateful for your thorough statement.

Governor Matheson, we are pleased to have you here today.

STATEMENT OF HON. SCOTT M. MATHESON, GOVERNOR OF THE STATE OF UTAH

Governor MATHESON. Senator Hatch and Congressman Marriott, I appreciate your invitation to me to testify before this hearing today.

It has been nearly 3 years since I appeared before a joint congressional subcommittee holding hearings in Salt Lake City on the subject of fallout from continental nuclear weapons tests. Those earlier hearings, which were held on April 19, 1979, culminated months of revelations about the conscious disregard shown by Federal agencies for the resulting health risk to the people of Utah, Arizona, and Nevada.

You were at that hearing, Senator Hatch, and you may recall that I told the subcommittee I was only "cautiously optimistic" about any positive results emerging from the hearing. I noted that: "This issue has become the subject of official inquiry every few years." Congressional committees have held hearings such as this one, but there had been a "lamentable history of the Federal system's losing interest" on this issue.

As I appear before you today, I am far less optimistic and far more cynical about the outcome of these hearings than I was 3 years ago. I see little reason to believe that they, like their numer-

ous predecessors, will result in answers to the questions the people of this State have sought for so many years.

Perhaps it would be helpful for this committee for me to retrace my steps because the message I carried to the hearing in 1979 is no less pertinent today.

I described the discoveries that had been made and the documents we had uncovered evidencing a calculated disregard for the effects on our citizens of those tests as well as the numerous efforts made to prevent completion of any thorough health studies.

I recommended several measures: First and foremost, that a thorough, scientific study be undertaken, independent of the Federal Government, to establish definitively, first, the actual extent of fallout in Utah and surrounding States and the levels of exposure suffered by our citizens; and, two, the actual effect that this exposure has had and may have in the future on the health of the people of this area.

As corollary matters, I suggested that Congress study possible avenues for compensating victims of the Government's wrongdoing and that it consider means of providing health care and health monitoring for those who suffered from the consequences of the fallout exposure, both now and in the future.

One of the final things I asked for 3 years ago was congressional appropriation of the funds necessary for this dose reassessment and health effects study and some assurance that the study would be completed. I was interested in preventing a replay of past events; that is, studies being started when public attention is focused on the question, only to be discontinued when the limelight turns elsewhere.

In 1979, I received numerous assurances from members of the subcommittee that something would finally be done. Since then, little has been done toward achieving the goals I sought. Long ago, dose reassessment and health study proposals were prepared by scientists at the University of Utah and by the State health department and submitted to the appropriate Federal funding agencies.

After interminable delays and bureaucratic runarounds, some of these studies have been rejected, while others have had their budgets slashed. Even though we finally obtained approval for a sharply attenuated study, we are now told that the funds to do this study are unavailable.

In the past 3 years, Congress has passed no legislation to provide the necessary funding for the health and dose studies. In fact, Congress has ignored this issue. Consequently, fine scientists at the University of Utah Medical Center await long-promised funding to do the much-needed independent study. And, once again, a dismal history is repeating itself.

With the exception of a small amount of money obtained by the University of Utah, the Federal agencies responsible for testing the bombs are again the only agencies funding and controlling any studies on the dose and health effects issues. We are right back where we started from, with the fox guarding the chicken coop, and the citizens relying on the fox to tell them the true state of the chickens' health.

The hearing today has been called to consider one more in a series of bills that marks the only congressional action in this area:

legislation to compensate fallout victims. This bill, however, like its predecessors, deals only with one aspect of the problem and ignores the long-range health concerns of the people of the area.

As an approach to compensation alone, I find the bill, in its broadest outlines, unobjectionable to the extent that it seeks to avoid the problems posed by the legal requirement that each victim must prove by a preponderance of the evidence that his or her injury was caused by the tests. However, I do feel that there are important concerns which the bill does not address.

As an article in the Salt Lake Tribune highlighted several days ago, because the study I called for 3 years ago was never funded—much less completed—the detailed dose and radiation-related cancer information upon which this entire bill is premised does not exist.

For example, I am informed that scientists can make only the broadest estimates as to the relationship of certain cancers to long-term exposure to low-level radiation. Also, because proper scientific studies have not been completed, it will be almost impossible to fix doses for the affected people. This is especially true of those large populations, such as those in the northern Utah area which recent studies have suggested may have received significant amounts of radiation over a long period of time but were beyond the scope of the old Atomic Energy Commission monitoring system.

While my profound sympathies rest with radiation victims and I support the notion of the Federal Government making restitution, I believe it is premature to distribute funds in compensation payments based upon inadequate and inconclusive studies.

This bill does not address the basic concerns of all the people of this region. As I said in 1979, the people of this area must learn what has happened to them so that their unnecessary fears may be allayed and their attention directed to any real dangers to their health and those of their children.

For those whose health has yet to be impaired by the long-term effects of radiation, preventive measures may be possible. Further exposure to radiation, in the form of medical treatments or otherwise, may be avoided. Those who may be susceptible to cancer or other ill effects may be made aware of that fact and their health can be monitored more closely to detect problems at the earliest possible time. And, finally, precautions can be taken by those who may have suffered genetic damage. These are the questions the people of this State and the region want answered.

Once again, I call on Congress to adequately fund an impartial, non-Federal study which can answer these questions. I have spent more than three full years attempting to secure funding for such a study from the Federal Government, but with very limited success. I firmly believe that only if Congress specifically provides funding for such studies will they ever be performed to any satisfaction. Therefore, I would urge Congress to provide approximately \$14 million—the amount initially proposed by the University of Utah Medical Center—to fund and complete a thorough health study and dose reassessment.

The results of such a study would serve as the basis for compensation legislation such as that proposed here. But until those study results are available, I simply doubt that Congress will act.

Once the broader concerns and fears of all Utahans, as well as our neighbors in Nevada and Arizona, are answered, the results of that study should provide the basis for extending much-deserved compensation to those who are actually entitled to it. In addition, all the United States would benefit from a better knowledge of the long-term health effects of low-level radiation.

I conclude, Mr. Chairman, with the same words I spoke to that subcommittee on April 19, 1979 when I said this:

We * * * have a commitment from the administration to thoroughly investigate the matter. But only Congress can insure that the funds are available and that they continue to flow until the project is finished.

Thank you.

The CHAIRMAN. Thank-you, Governor.

One of the things that concerns me is whether there are sufficient resources in the downwind regions in both Nevada and Utah to screen people for cancer, to treat people with cancer, especially radiogenic cancer. Do either of you believe that the resources are sufficient? If not, do you have any plans for improving them? Is there a role for the Federal Government to play here in understanding your comments here today?

Governor List?

Governor LIST. Speaking for my State, I can tell you we do not have the resources. As a matter of fact, that is precisely what we sought in the study application to which Governor Matheson has referred.

We had requested that health teams be given the funding to examine 400 adults from each of the six communities to determine whether there was a correlation between fallout and thyroid cancer. All 2,400 individuals were going to be examined for cancers of the head, the neck, and the chest. In addition, our Desert Research Institute was proposing that they study the soil and other elements to determine how much fallout had occurred. That is something for which we simply do not have the resources. Even if we did, we think it is a Federal and a national responsibility.

The CHAIRMAN. So do I.

Governor Matheson?

Governor MATHESON. Excuse me, we are sharing the same microphone.

The CHAIRMAN. There are two microphones.

Governor MATHESON. The Tristate Commission, of which Governor List spoke in his testimony, was an effort on the part of the three States which were impacted by the fallout to design into place a number of processes to address the type of question which you raised.

We determined, after discussing the capability of the three States and examining the specific location where that kind of evaluation could be monitored and supervised, that the University of Utah had the expertise in cancer research, cancer diagnosis, and cancer treatment and felt if we could obtain the proper funding we could do the proper testing.

The funding, of course, has not materialized. However, the capability to do so with that funding does exist.

The health effects studies, which were designed 3 years ago by the experts at the University of Utah, were done in the context of that Tristate Commission concept. We have worked very closely and cooperatively together with the other three States. There is no reason we could not continue. Our track record in doing so is totally intact.

Although Governor Babbitt is not here, I am certain, based upon his prior commitment to that process, he would agree as well.

The CHAIRMAN. I think so, also.

Governor List, S. 1483 now covers the civilian workers at the Nevada test site just as it does everyone else who was exposed to these downwind problems.

Do you believe that this is an equitable arrangement even though any radiation injury for these workers would be technically work related and, therefore, the responsibility of the workers compensation program?

Governor List. I think it ought to be augmented through this bill.

The CHAIRMAN. In other words, you agree with the bill's approach even though these people were workers and their injury may have been work related?

Governor List. Yes; I do, because the risks were simply unknown. Ordinarily, when a workman goes on the job he recognizes what the safety hazards are, and the compensation available is something he takes into account in weighing it against the risks.

Here the risks far exceeded it, and the benefits under ordinary compensation for workmen are simply inadequate.

The CHAIRMAN. All right.

Am I right in assuming that you both believe that the downwind citizens received more than the negligible exposures to radiation which have been claimed by the Federal Government? Do both of you feel that way?

Governor List. Absolutely.

Governor MATHESON. One of the interesting experiences we have in our country is when a risk occurs involving nuclear exposure we try to find out the nature and extent of that which might cause harm.

The Three Mile Island incident, occurring in Pennsylvania, is a good example of the comparison. In the process of investigating the risk of exposure at that point, Governor Thornburg recommended that pregnant women and children within a very short radius of the site remove themselves physically from that area because of a fairly small amount of nuclear exposure. We are interested in taking the comparison of the exposure at Three Mile Island with the comparison of the measurements of exposure at just one or two of the fallouts during the aboveground atomic testing in Nevada.

Interestingly enough, the exposure in the fallout area in some cases was between 40 and in some cases 500 times higher than the exposure at Three Mile Island.

That should put into perspective the concern about the exposure and the need for scientific evaluation at much less exposure rates than we started out with in the early 1950's when the program began.

The CHAIRMAN. Also, am I right in assuming you both believe that the Federal Government was negligent regarding its responsibilities to warn the public during those atmospheric tests?

Governor Matheson?

Governor MATHESON. When we took the effort to bring forth through a discovery process information about notice and the involvement and understanding about what was actually going on, I think my testimony back in 1979 documented with something over 1,000 pages of testimony the fact that there was not only failure to give notice but in documented cases we can establish. I think in any court, the idea that there was a deliberate attempt on the part of Federal agents to hide information which was damaging to the health of the people of the area.

I think the sheep case incident and I think the study that Utah State University was contracted to do, and then absolutely bludgeoned into leaving out the relevancy of the exposure issue, are pretty good evidence that lack of notice is only part of the chicanery that the Federal Government is guilty of in the history of this sorry event.

The CHAIRMAN. We certainly agree on that.

Governor List?

Governor LIST. I think there was an indifference in the beginning to the effects. Maybe worst, there was an effort to deliberately downplay the potential damages. They literally went around, and the evidence is replete, they went around to these people—on occasion they would go around—and said: "Well, don't worry about it. It might be a good idea to keep your kids inside when the blast goes off," ignoring the fact that within hours the children would be outside.

They would go around and hose people's cars off or recommend that they hose their cars off and ignore the halflife effects of the radiation.

That indifference grew over the years into really a deliberate obstruction of any effort to find out what it was that really went on at the time with respect to the notice and to the failure to let people know.

The CHAIRMAN. Do you Governors believe that the mechanisms set out in this legislation, including our approach to probability of causation and the change that we have taken here, are fair and equitable? Is there any way that you feel this administration can be improved?

Governor LIST. That really calls, I guess to some extent, for some medical advice. The Secretary, under the bill as I read it, is directed to develop tables and formulas taking into account the zone and the age of the individual, the person's sex, the relative time of exposure. I suppose it is extremely difficult to quantify.

I cannot improve upon it. Perhaps some physicians could, but I cannot. I respect the effort to try to arrive at a table to bring some certainty to it.

I share with Governor Matheson the belief that we need further studies to determine long-term effects, but I also think we ought to get underway with a compensation program in the interim.

The CHAIRMAN. We think we will get to the others in the process.

Governor LIST. Good. I can't improve upon the process that has been suggested in the bill.

The CHAIRMAN. Thank you.

Governor Matheson?

Governor MATHESON. I think we have to be practical about this piece of legislation. I don't think there is anyone who would disagree with the fact that two factors are indisputable. The first is that a serious wrong was done. Second, those who were wronged should receive whatever the system can provide back to try to even the score. I am very interested in seeing those who were wronged get the benefit of that remedy.

I would like to see the health studies upon which the proper professional opinions can be made completed in order to establish that relationship as quickly as possible. I am concerned that it is very difficult for the Congress, at a time of severe economic disparity, budget deficits, and concerns at that level to be willing to address this type of bill without that kind of scientific continued study.

However, I would go much further if I were deciding—if you could get a bill through the Congress this month or this year—if I were doing it, I would have the Government admit liability and not involve myself in anything but letting the courts decide causation and recovery. That is how strongly I feel about it.

However, I have the idea that, without the Congress funding the mechanism by which you can achieve support to make the restitution, we may be spending a lot of time not getting that restitution. Therefore, my testimony is an indication that front-end effort is indispensable to success. However, I am totally sympathetic to the concept of restitution.

The CHAIRMAN. I might mention that I cannot help but agree with you, that the study needs to be done. They have promised to me that they will come up with the \$6.4 million which the University of Utah has requested for the study.

We have gone through a couple years of Californians wanting this study and other people wanting this study to finally get it to the point where the University of Utah, which has the best access to materials, can do the study. I suspect we will get the moneys for the study.

Second, I agree with you, Governor Matheson, we have had a difficult time even getting the Government to come in and admit there may be a problem here, let alone admit liability. Even though I think the evidence is overwhelming that they should admit liability, they are not going to do that.

Third, one reason they have been unwilling to admit liability is that they know once they do; it may expose them to all kinds of other problems which go far afield from this problem, which is somewhat of a unique problem, somewhat of an isolated problem, that we are trying to solve.

I share many of your feelings and I share some of your cynicism with regard to the way we have been treated over the last 3 years by the Federal Government in trying to bring this to an effective resolution.

However, I think we have come a long way. If we can continue our bipartisan approach, both Democrats and Republicans working

together, I think we have a good probability of getting a bill through which will provide some justice here.

I might mention this legislation uses national and international scientific findings and there are many such findings even though the Nevada-Utah studies are inadequate, so we feel we have come a long way on the findings and on the studies as well. Gradually, we are breaking it down.

During the last hearings, even those Government officials who could not come out and endorse the bill, pretty well endorsed the concept of liability, thought it was the best approach we could take, and that is a far cry from where we were.

At the last hearing we held, to show the importance of subsequent hearings, the Government for the first time, through a Veterans' Administration representative, admitted that they are paying compensation to 12 veterans who were at the test site. That never was voluntarily given to us before, although I think we had asked the questions which should have required that response.

Therefore, it is a slow, arduous, very difficult process which tends to make one cynical, but it is the way it works and we will do it the best we can to get it through.

Congressman Marriott?

Mr. MARRIOTT. I just have two questions. First of all, Governor Matheson, I share your frustration. You and I were at this level 4 years ago, as I recall, discussing studies and one thing and another.

One of the problems I have with studies—and perhaps we need more but that is a good excuse to do nothing for another 4 or 5 years but have studies—every time we get into committee and no one wants to act, we call for a study. Let's have a study; 10 years later we get information which still is not very conclusive.

The point I would like to ask you is this: As I understand it, Dr. Lyon, of the university, has committed \$2.3 million for a study. There is another \$6.4 or so million they are trying to get.

Do you feel that anything conclusive will come out of this study? If not and we provide another study, what do we plan to gain from that which would in any way better the situation over the way it now exists?

My concern is, Will we accomplish anything or will we simply delay this a few years more and then let the ancestors of these people die, and so forth?

Do you see what I am getting at? I am concerned, very concerned, that in the name of solving a problem we just call for a study, and 10 more years go by and people tend to forget the seriousness of the current problem. How would you address that?

Governor MATHESON. Let me begin by talking about the funding of studies for a moment.

When we came in 3 years ago we talked about a \$14-million proposal which the University of Utah designed into place in order to begin the type of studies that would provide the answers of which I speak and upon which you can make legitimate scientific conclusions, and you can get medical opinion on probabilities which will settle the issue of liability and settle the issue of causation. Then a process exists to determine damages.

However, since that time, the size of the pot has dwindled down to the point where we are talking about \$6.4 million and you indi-

cate that three different agencies are going to share in that cost. That has been nothing but talk. The small amount of money which has really gone to the University of Utah in the last 3 years is almost embarrassing.

My point is this: We have struggled yeomanly and faithfully, but totally unsuccessfully, with this minor piece of money with the executive branch of the Federal Government. What I am suggesting is, if you really want to do a service to the people who would like to get some compensation, and deservedly so, appropriate \$14 million through the Congress at once and give that to the University of Utah and let them get started on these studies. Proceed with the balance of what you wish to do.

However, I am just cynical enough and I have gone through just enough frustration to believe this: I do not see an overwhelming number of the Members of Congress coming forward to support this legislation. If you do not have something upon which they can peg the decision, then I think we may be taking a lot of extra time building up the hopes of the people who deserve the remedy and then having them dashed again.

I would make just one other point. The studies will do much more than simply find answers, and I cannot guarantee what answers they will find. Scientists do not tell you that. However, the people at the University have been sufficiently involved in this to tell you that they can do legitimate studies and they would come up with legitimate conclusions. That is the basis upon which we ought to make decisions, anyway.

The public health impacts—earlier diagnosis of cancer, the ability to predict those who have a propensity to have it, how to treat it better—to me, these have a major public impact. The nature of my testimony today addresses that in terms of those studies, and that alone ought to be sufficient for the funding.

Mr. MARRIOTT. I can understand that and I agree with that. However, what I want to caution is this: I do not want to have to delay everything now for another 4, 5, or 6 years while we do a study that may not tell us anything anyway.

[Applause.]

The CHAIRMAN. I think the studies are important. We have plenty of them, plenty to justify this legislation at this point.

As I understand it, the \$14 million is kind of a wish list. In other words, if we had all that, we could cover everything we have to cover. As I understand it, the \$6.4 million should be enough to resolve this problem. One time they were only going to put up \$1 million because of another bid on this particular study.

We have had to work and fight to get the \$6.4 million, which I think we will get, for the University of Utah, which should do a thorough study on this matter.

I presume Dr. Mays will enlighten us more on that.

However, there is one problem. If we put an authorization aspect to the bill, by funding these studies I think we really will kill this bill at this particular point. I think we have to get the bill as written through Congress and enacted into law.

I am not saying that is going to be easy because it is never easy. I have not seen many bills go through in a short period of time that are bills which involve only three States. This bill does have

the implications of many other States, but really we have only three States. That means six Senators and relatively few Members of Congress.

Your point is well taken. Certainly we are working toward that. We have come a long way to get that study money. We have \$2.3 million right now of the \$6.4 million, and I have commitments to get the rest of it. We will just see how they live up to those commitments.

We even have had problems, for instance, in asking DOD and DOE under the terms of this bill how many people they think will be covered. I believe there is a disparity between the two of them. I think they have sent letters out, but those letters are lodged at OMB. We have to go to OMB to get those letters certainly before the markup date.

However, your point is well taken. On the other hand, if we want a bill, we have to move ahead with it and do the best we can to get it. With relatively few States involved, you are right; it is a very difficult thing to do, but we have hope that perhaps we can get this through. We think it is probable, but whether it will actually go through will remain to be seen. We are going to do everything we can. Of course, we appreciate all the help you give in helping us to get there.

Mr. MARRIOTT. I just want to make a point. If we are going to have a study, let's have a decent one. I think that is what you are asking for with that \$14 million, Governor, rather than the approach we are dealing with here.

My second point is this: Frankly, I believe that the Government knows what the dosage level was. [Applause.]

I think if they want to compensate the victims based on the probability that those dosages cause cancer, they can do it without any more studies.

I want to get something going. We have been fiddling around here for years and it is time we put things to rest.

Governor MATHESON. I will make only one other comment. I think the studies are critical for two reasons.

First of all, the health effects for those who have not contracted the illness or the disease—I think that is critical. It is also ultimately going to be critical for those who have.

Setting that aside, if you are going to go for a bill, I would rather go for one in which the Federal Government admits its wrongdoing and proceeds to make whatever damages are available in a normal court process. That is my personal point of view, which is slightly different from yours.

The CHAIRMAN. That is mine, too. It is just not going to happen; that is all. In other words, if I could get the Government to admit their wrongdoing and proceed with awarding damages, I would be delighted, but they are not going to do that.

Governor MATHESON. I wish you success on the one you are pursuing.

Mr. MARRIOTT. I have one last question. I know time is fleeing by.

Did both of you mention you thought there ought to be some funds set aside now for monitoring the health status of the people

of southern Utah and Nevada? Would you give a little more detail on that if that is what you meant?

Governor LIST. It is contemplated that the grant money would enable us through the University of Utah or through other entities to go out and basically do a hands-on physical examination of the people in the area to determine specifically—

Mr. MARRIOTT. Your proposal was part of the \$14 million, not separate from the \$14 million?

Governor MATHESON. As I recall, that concept was part of the \$14 million. I do not believe it is part of the \$6.4 million.

Mr. MARRIOTT. OK.

The CHAIRMAN. We appreciate both of you being here. We hope you will continue your efforts because the only way we will ever get a bill is if both Governors are pushing for it with everything they can. We appreciate the efforts you have made. [Applause.]

I wish to extend a special welcome to our next witness, Mrs. Gloria Gregerson, who is both a downwind citizen and a cancer victim.

I know, Mrs. Gregerson, that you have come a long way to testify at this hearing today. I want you to know personally how grateful this committee is that you will share your experience with us.

With that introduction, we will turn the time over to you.

**STATEMENT OF GLORIA GREGERSON, BUNKERVILLE, NEV.,
ACCOMPANIED BY JANET GORDON, DIRECTOR, CITIZENS CALL**

Mrs. GREGERSON. Thank you. I appreciate the opportunity.

My name is Gloria Gregerson. I appreciate the opportunity to present my testimony on S. 1483.

I am a member of the board of directors of Citizens Call, an organization of and for citizens who have been affected by testing at the Nevada nuclear test site—citizens mainly in Utah, Nevada, and Arizona. I am representing Citizens Call today, as well as myself and my family.

I have lived in Bunkerville, Nev., all of my life. It is less than 100 miles away from most parts of the Nevada test site.

There is a typographical error in my testimony. I was 10 years old when the nuclear testing started, rather than 11. I am currently in precarious remission from two types of leukemia.

I am here today because I feel that it is important to remember what compensation legislation is all about—we, the radiation victims. We plead with the members of this committee and with all of the Members of Congress who will ultimately be deciding the fate and shape of this legislation.

We ask you to consider how you would feel if you lived in my area, if your children were exposed to fallout from hundreds of nuclear tests. Consider the fairness and rightness of a Government policy wherein a vast area of our country and its citizens are put at risk; and consider the attitude of officials and administrators currently responding to this situation. Would their attitudes seem adequate and fair if they touched you personally? Would this legislation insure justice if you were in our shoes?

In 1979, the New York Times printed an article which reported some of the history of the nuclear testing, and what was happening

in 1951 when testing began at the Nevada test site. Around the country the Atomic Energy Commission was promoting an image of safety. The officials were telling citizens near the test site that the fallout clouds which were drifting over them were too minor to be a problem, but citizens in population centers were told that it was safe because the fallout settled on "virtually uninhabited land."

A San Francisco Chronicle editorial observed that "this creates an interesting new class of citizen: 'virtual-uninhabitants'. Their voting density is slight; they are politically 'safe'—and virtually expendable." How would you like to be thought of as a "virtual uninhabitant" or "virtually expendable person?"

We are aware that much testimony has been presented already, going back as far as the sheep cases of the mid-1950's. We have read the testimony of earlier witnesses on the merits of S. 1483, and the versions of various Government witnesses concerning what has happened to us and how we should be treated.

We feel that there is a considerable amount of discrepancy between the official record and what we actually have experienced. It appears to us that the official record is even being "cleaned up" by the offsite radiation exposure review project. This concerns us greatly as one of the basic components of a formula to determine compensation for victims under S. 1483. The amount of radiation to which we were exposed will in all likelihood be determined, either wholly or mainly, by the very officials and agencies who are saying that we didn't ever receive enough radiation to cause us any harm.

We offer as an example of this discrepancy the testimony of Lt. Gen. Harry A. Griffith, U.S. Army, Defense Nuclear Agency, before this committee on October 27, 1981, wherein he reported the findings of the Interagency Task Force on Compensation for Radiation-Related Illnesses: "This task force concluded that the whole body external doses to some 175,000 close-in downwind residents averaged less than one-half rem."

This amazes us because we have read official Government documents which indicate that a number of areas received more than a full rad of radiation from a single test, and there were hundreds of tests. We are aware that a rad and a rem do not equate exactly, but they are generally accepted to be loosely equivalent. Even loosely, that seems to us to be an incredible discrepancy.

The Government agencies involved in testing at the Nevada test site have a known history, dating back to the 1950's, of withholding information from us and of not taking precautions to insure our health and safety. This lack of honesty has been established in reopening of the sheep cases of the mid-1950's.

The discrepancy between what we have experienced during 31 years of nuclear testing and what Government officials say we experienced is very important because the version that is accepted as valid will determine whether justice is served.

We don't need to tell you, Senator Hatch, nor the rest of Utah's and Nevada's congressional delegation, that the virtual uninhabitants of this region are as patriotic, industrious, religious, conservative, and honest a people as can be found anywhere in this country. We are not a people who would be likely to make up stories about what we experienced or participate in any program which is likely to endanger the stability of our Government or its economy.

We do not wish to imply dishonesty on the part of any particular Government official. We do believe, however, that promoting the testing program without hindrance caused by public concern had a higher priority than our health or our constitutional rights to participate in decisions which affected our lives, liberty, and pursuit of happiness. There is ample evidence of this in official Government documents, and we believe that testimony presented to date on S. 1483 affirms that this policy is still firmly in place at this time.

I offer my personal experiences as further evidence of the discrepancy which we feel must be recognized at all times during consideration of S. 1483.

I remember the day the nuclear testing started in Nevada. The first blast came without any warning. We were awakened out of a sound sleep. No one was even informed it was going to happen.

We lived in an old two-story home. It broke out several of our windows and cracked our house on two sides the full length of the house.

After this my parents would not let us stay in the house. They took us, still in our pajamas, to the top of a hill where we would watch the blast from there. We could see the flash immediately, and a few minutes later the rumble would come up the river and bounce back and forth between the different mountain ranges. A little later the mushroom cloud would appear.

We were quite close to the test site. We could see the planes as they circled to drop the bombs.

The radioactive cloud, as it came over, was really distinct. It would usually come over our school campus between 9 and 10 in the morning. You could always distinguish it from any other clouds because it had a pinkish-orange tint to it.

I remember my principal told me just 2 or 3 years ago that the AEC had called him on several occasions between 8 and 9 in the morning and told him not to let the kids out of school for any recesses or any classes, to stay inside the building. By 9 or 10 in the morning he would call back and say, it's OK, you can let them out. There was not anybody taking any readings in our area. There was no way anybody could have known that it was virtually safe for us to go outside.

Later the Government officials would come to our school to talk to us in assemblies, but they never came until after several blasts had already been shot off. They would tell us different things for which we were to watch.

They would preface their remarks saying: "There is nothing to be alarmed about. There is nothing to hurt you, so don't worry, but wash your cars every day; wash your clothes twice before you wear them; don't eat the plants and the vegetables; be sure you wash everything off with water before you even walk on it; don't drink the local milk," yet that is the only way we had to get milk, through our cows.

They just kept emphasizing one point, and that was: "Nothing to worry about. There is no danger." We wondered why they took the trouble to come all that way just to tell us there was nothing to worry about.

We find now, in one of their documents, that they had an extensive public relations campaign to assure us that there was no

danger; but there was no evidence at that time on which to base such an assumption. To this day, no epidemiological studies have been done to honestly assess the long-term effects of radiation exposure on citizens living downwind of the Nevada test site, nor have cumulative impacts over a long period of time from several types of radiation been assessed.

If our safety and well-being had been a top priority, this type of study would be giving us definitive data right now, just as Governor Matheson stated previously.

Some of us were given badges to wear. We were monitored but we were never told what these readings were. We were never informed about the potential dangers of radiation exposure. Many found it curious that in civil defense instructions we were told that if Los Angeles were hit with a nuclear bomb, we would have to stay in our bomb shelters for up to 2 weeks.

I remember playing under the oleander trees, which is a wide leaf tree, and the fallout was so thick it was like snow. We do not have snow where we come from. As a result, we liked to play under the trees and shake this fallout onto our heads and our bodies, thinking that we were playing in the snow.

I remember writing my name on the car because the dust was so thick. It was lots of fun. Then I would go home and eat. If my mother caught me as a young child, I would wash my hands; if not, then I would eat with the fallout on my hands.

I made most of the bread for my family when I was still very young. I am not so sure that I always washed my hands, but I did not wear a hairnet either.

Our families ate the vegetables from the fallout-exposed gardens and livestock raised on our fallout laden grass. The AEC told us not to drink the local milk, but they never said anything about our water.

I don't recall ever being sick in elementary school. Once I got tired of school for the day while I was still in elementary and told the principal I had a headache so I could go home. Then I went outside and banged my head against a tree a few times so that I could get a headache because I knew darned well I had better have one when I got home or my mother would send me back. When she saw me she said: "Gloria, you are not sick. You are never sick. Go back to school."

However, within a few months after the testing started I did become ill. I began to suffer spells of nausea and headaches all the time. It seemed like I was always sick and my physical development did not progress normally. By the time I was 17 I had ovarian cancer, which spread to the intestines and stomach and involved 13 major surgeries. Needless to say, this meant I would never be able to bear children. Having a family was and still is the most important factor in my life. My husband and I have adopted five children, four of them older children.

In 1970 I was diagnosed as having squamous cell carcinoma in the vagina and had more surgery. This form of skin cancer has plagued me until even now.

In October 1979 we received our only baby, and 3 months later I was hospitalized and later diagnosed as having—[witness is

crying]—this is so hard for me. I am sorry. I was later diagnosed as having acute myelomonocytic leukemia and given 3 weeks to live.

It was horrifying to suddenly have all of my hair gone and my face nothing but big blistering sores. My skin would tear if I moved wrong. I was confined to the hospital for 4 solid months. My temperature would keep going to highly dangerous levels and, as a result, I got frostbite from the ice blankets that were used to keep my fever down. My family and my children did not recognize me for many months because of the chemotherapy.

I am in remission right now, but lately I have had more problems and I am scheduled for a bone marrow transplant on April 27, I just hope that when I get down there that they will say it is OK and I will not have to have it.

I have three sisters and three brothers. Two of my sisters have also had cancer, two types for one sister. One of my brothers has fertility problems. My mother and father both have skin cancer. My mother has had ovarian cancer. Now my doctors tell me cataracts may be forming on my eyes.

It may sound as though I am a special case, but I really am not. We can bring forth hundreds of victims who can repeat a similar story. They can tell of clusters of cancer, sometimes several in one family or in one individual, and alarming numbers in neighborhoods and communities.

In an informal survey of my town, I located 4 families in about 50, who did not have some type of cancer in their family. One family had seven different people in their family with cancer, and had had over a dozen miscarriages. We find it curious that we hardly ever heard of cancer before the testing began but, soon after, these types of cancer became commonplace to us.

In my opinion, the Government's attitude on the subject of the fallout victims and nuclear testing is shameful. The pain, horror, and suffering brought to us and to our families is so great, and yet the Government feels we have no justified complaint. We are looked upon by some as fortune hunters in our suit to receive just compensation for our medical bills, suffering, and death.

My medical expenses are now well over \$250,000. Insurance has helped but hasn't begun to cover it all. What about the victims who do not have insurance? Every time I must go to Los Angeles for another painful bone marrow biopsy it costs me \$750. I had two just last week. My bone marrow transplant on April 27 will cost me an additional \$250,000. I will reach a point where I cannot survive without it, and there is less than a 40-percent chance of survival with it.

We are very grateful that an attempt is being made to make a just and equitable compensation to citizens who have been hurt. We recognize that this process is very difficult, but in a democracy any public policy which victimizes a portion of the people it is meant to protect cannot be tolerated. The difficulties must be overcome. Senate bill 1483 does give us hope.

The major difficulty which we see in S. 1483 as it is now written is an honest determination of our actual radiation exposures from nuclear testing. Most of the radiation exposure data is being handled and manipulated by officials we cannot and will not trust. These same officials have always maintained that the radiation re-

ceived by downwind residents was not really dangerous. Yet they have always canceled tests when the winds were blowing toward Las Vegas or populated areas.

As recently as February 12 of this year, two tests were postponed because of a change in wind direction toward a populated area, according to an official test site press release reported in a Las Vegas newspaper. What do you suppose would be happening now if tests had been conducted when the winds blew toward California? How dare they decide to protect their children living in populated areas at the expense of our children. Test site officials have absolutely no credibility with us.

At a December 2 and 3, 1981, meeting of the Dose Assessment Advisory Group in Las Vegas, Mr. Anspaugh, science director of ORERP, made this statement concerning radiation measurements and modeling: "I think we have all been painfully aware that we have very few measurements to really do this reconstruction, and from these few measurements the rest of it is entirely modeling."

This modeling may or may not have considered all of the extenuating local conditions, any one of which could invalidate the entire procedure. Estimates of exposure are drawn from this esoteric modeling which may then be used to determine compensation or lack of same.

We feel that it is absolutely essential that fallout maps based on this modeling and other data being produced by the Dose Assessment Advisory Group must not be published at this time, as is called for in Mr. Marriott's version of this legislation. Publishing would tend to give this procedure an unjustified validity, which must be avoided until such time as independent evaluation procedures can be developed.

It is imperative that assessment of such actual data as exists, including biological indicators, be conducted by independent scientists without a vested interest, financed and supervised by an entity without a vested interest. We believe that everyone associated with and about a test site does have a vested interest in this project.

It should also be recognized that our knowledge of what we experienced is a valid record of exposure, and, if recorded, would probably be more extensive and correct than any other. We plead with the committee to retain as much diversity as possible in relation to which evaluations of exposure are given credibility for purposes of compensation.

Citizens Call retains additional concerns, some of which were expressed to this committee earlier:

Health care and screening need to be provided. We calculate that in many cases the compensation won't even cover medical expenses.

There are some well documented connections between radiation exposure and problems other than cancer, such as birth defects. Justice absolutely dictates that these categories be identified and compensated.

Extensive independent epidemiological research should be done with the goal of understanding cumulative effects of low level radiation exposure, rather than for proving exposure didn't happen or

didn't hurt us. The Government is now spending millions of dollars on the latter.

All of the victims deserve redress, including the veterans.

Southern Paiute Indians present a unique and special problem which must somehow be addressed. Partly because of their termination from tribal status in the mid-1950's, many died without even a death certificate, and many more died with no medical treatment or diagnoses whatsoever. Perhaps some provision could be made to determine an award to Paiute villages based on compensation averages in adjacent white communities. It is a difficult problem.

We wish to call your attention to a resolution supporting nuclear fallout compensation passed by the Utah State Legislature this year.

Many people in southern Utah have contacted us expressing a desire to attend these hearings. However, because of the expense of travel and because the hearing is always held during a workday, they are unable to attend. We appreciate hearings being held in Utah; we only wish one could have been in southern Utah as well.

Thank you for your conscientious work on our behalf. We appreciate it.

The CHAIRMAN. Thank you so much.

Congressman Marriott has to leave at 11 to go to another county for prior commitments. Therefore, we will turn to him for questions he has.

Mr. MARRIOTT. I would like to thank you for this testimony. I think it is very good, and it is testimony which this committee and the entire Congress need to hear. I congratulate you on its preparation.

Let me say this: It is always difficult to put a value on a human life, put a value on health, or put a value on infertility or anything else. What should the Government do in this case? Let's talk about the compensation. You are one who has been a victim. There is no question in my mind of the Government's liability. What should the Government do to help you? What would you personally be seeking in terms of this situation?

Mrs. GREGERSON. I am just seeking some help to help with some of these medical bills. I am not asking for a certain amount of money, although I am involved in the lawsuit with the downwind victims. I do not care whether I receive \$2 million or \$55,000. I don't care. The fact is that I have insurance to cover a lot of my problems, but I am worrying about these people who do not have insurance.

If my medical bills are the way they are, what are these poor people doing but mortgaging their homes, losing everything they have?

Mr. MARRIOTT. Of the \$250,000 that you have expended to date, how much of that has the insurance companies not paid?

Mrs. GREGERSON. From the time I turned 17 I started having medical problems. As I said, I had 13 major surgeries in less than 2 years. I never had a penny of insurance until after I married my husband about 10 years ago. I had all of these problems.

Mr. MARRIOTT. So you have had substantial costs not covered by insurance?

Mrs. GREGERSON. Yes. I would daresay probably three-fourths of it is not covered by insurance.

Mr. MARRIOTT. You would also say most people in southern Utah or Nevada who are also victims would be in the same situation?

Mrs. GREGERSON. I definitely—

Mr. MARRIOTT. Many of them have been and are now incurring heavy hospital and medical bills without compensation?

Mrs. GREGERSON. I definitely believe that because I know when I first contacted cancer I could not get insurance. I had not been able to get insurance until I did marry my husband and he belonged to a group plan which accepted me. Other than that, I would not be able to get it. I have tried since to get other kinds of insurance.

Mrs. GORDON. May I respond as well?

Mr. MARRIOTT. Yes.

Mrs. GORDON. I have not talked to a single soul—of course, we represent radiation victims—there has not been a single soul who has said that they are looking for compensation to make money. What everyone says, and what I think the majority of the people in this area feel, is that somehow or other the Government has to stop a policy like this. The only way we seem to be able to get their attention is to hit them in the pocketbook.

The compensation can never possibly, no matter how much it would be, compensate for the losses we have incurred. All it does is to give an example of good faith on the part of the Government that they should not have done what they did to us, they are sorry about it, and it might help them to alter their policies in the future so that they do not do it again.

The CHAIRMAN. I might mention that Mrs. Janet Gordon is accompanying Mrs. Gregerson. Janet gave excellent testimony before our committee at a previous hearing on October 27, 1981.

Mr. MARRIOTT. I again congratulate you for those statements. I think what you are doing today and what you have said today reflects on the character of yourselves and the people of that area.

I, for one, think your just compensation would run into the millions. However, I have never talked to anybody in southern Utah yet who is out to make a windfall profit. What they want is justice. That is what we hope to accomplish with this bill.

Again, thank you. I apologize because I have to be at another commitment, but I will read the remaining testimony and I would be willing to take this before the House committees.

Mrs. GREGERSON. Thank you.

The CHAIRMAN. We appreciate your efforts, Dan. Thank you for being here today.

Mrs. Gregerson, as you undoubtedly know, this issue entails some very complicated considerations concerning not only law but also science itself. It is not an easy issue. Some of us would like to make it an easy issue but there is nothing easy about it.

Some people have suggested that because of the implications of what we are attempting to do, we should wait a few more years for more analyses of potential remedies and for more scientific research.

What do you think of these arguments? Do you think we should wait or do you think we should act now and do the very best we can?

Mrs. GREGERSON. I think we should act now. I do not believe in waiting for one reason. There are so many other little people out there who will be hurt if we wait any longer. I think we are 31 years too late already.

The CHAIRMAN. I do, too. We will get the studies and we will get the law done, but I think it is important that we move on this bill.

Mrs. GREGERSON. I definitely do. I have five children to worry about. I would hate to see one of my kids come down with what I have.

The CHAIRMAN. That is right. I think sometimes people ignore that there have been a lot of studies done on this, and a lot of them support what we are saying here.

Mrs. GREGERSON. Definitely.

The CHAIRMAN. I agree with what you are saying here. I personally appreciate your attitude, knowing that you have these terrible afflictions, to come in here and be as calm—I know you are not very calm, but to be as calm as you are—and to feel the way you do and express yourself.

I have yet to find a Utahan who is looking for a windfall profit.

Mrs. GREGERSON. That is true.

The CHAIRMAN. I have yet to find one. We did hold informal hearings in St. George during 1979. In the initial stage, some of the most important testimony in this issue, which helped to accommodate this legislation, occurred there.

Let me ask you this: The decision to let the courts decide these cases was made as an attempt to insure an impartial and independent consideration of the merits of each case.

Do you think that this independence is important? Do you think it was wise to select the courts for these purposes rather than, say, some administrative agency?

Mrs. GREGERSON. This is a personal view, but I say yes, I would be very happy if the courts could decide it and not some bureaucracy. This is what I do not like, the bureaucrats.

The CHAIRMAN. Do you think the method set forth in this legislation is fair to the downwind citizens?

Mrs. GREGERSON. I definitely do.

The CHAIRMAN. Mrs. Gordon, I know you have a special concern for the southern Paiute Indians. I wonder whether you might elaborate about this concern and let the committee know what justice will require regarding these Indians.

Mrs. GORDON. It is a very difficult question, as you know. You have been working on the legislation for reinstatement. The Paiute Indians were terminated in 1955, as I recall. They didn't have decent tribal services at that time or previous to that. Most of those people, many of them, never even had death certificates, let alone any kind of medical care.

Trying to make a just and fair evaluation of which ones of them even died from something that would be covered is going to be almost impossible.

One of the things I would suggest to you, though, is that each of the Paiute villages is adjacent to a white community, or almost all of them. Kybab and Malapa are not. However, they are close enough to white communities that I think probably the best possible way to deal with it would be after a period of time, when a pat-

tern of compensation is developed in a particular community, so you know what percentage of the people are ultimately going to be compensated. Then just make an average award and make it to the tribe rather than to any individual. I do not know how you could possibly do it.

These people, the Paiute Indian people, tended to live on sometimes poached deer and rabbits and pine nuts during those days. Their exposure had to be at least as great as any of the rest of us. A lot of them did not even have the benefit of food coming in from outside, as some of us did when we went to the store to buy our food.

Obviously, these people deserve to be compensated the same as anyone else. How you are going to determine it when you do not even have a death certificate, I do not know. It is almost an impossible problem. I think some fair remedy must be made.

The CHAIRMAN. We have come such a long way. When we first started, we came out with some sort of a tort remedy which would have left wide-open exposure. It did not appeal to many people, to be honest with you, and probably should not have. It did not appeal to me.

We have to come in with an approach that really works on probabilities and which makes it easier to prove, gives the benefit of the doubt to our downwind citizens but, on the other hand, does not act as a ripoff to the taxpayers.

We have had a lot of downwind citizens who have been afflicted say—in fact, every one of them has said to me—that is what they would like to have.

I think now we have more interest in this bill than at any other time. We are hopeful we can resolve it. Of course, this will be the basic bill. We hope we can get it out of the committee. It will be the basic bill to which any amendments could be added. We do not know what the final bill will be, but we certainly hope it will be something which will please all of us, including all the taxpayers in this country.

Mrs. GORDON. I would like to respond by saying probably we are as concerned as anybody in this country that this bill not be abused. I think there will be a considerable amount of peer pressure locally that interlopers, so to speak, not be given better treatment than the people who truly deserve it.

I think the value of the courts' handling this is that individual cases can be considered, individual circumstances can be considered.

For instance, the probabilities tables will show you that thyroid cancer will have one of the highest probabilities of all. Under a compensation formula, then they would automatically be in line for a larger compensation. Thyroid cancer does not cause the kind of suffering and pain that leukemia does. The court needs to take those kinds of considerations under advisement when they are determining awards for compensation. That is one of the values of going into the courts.

I would like to state, though, that we feel very strongly about what Governor Matheson said; an acknowledgment of liability by the Government probably would make that process a good deal easier.

The CHAIRMAN. So do I.

Mrs. GORDON. It is going to be very difficult for us to go into court and prove our cases, particularly with the Federal Government and all of its scientists who have all these years been doing studies to prove we did not ever have any harm. They would be bringing their studies up and slapping us around with them, as they have been doing in the past. We need some kind of help to stand up to those people.

The CHAIRMAN. This bill, hopefully, will give you that. I agree with you and Governor Matheson; it would be a wonderful thing if the Government would own up to its responsibility here. It has not been willing to do so. In fact, in all honesty, we have had a great deal of difficulty in many ways, but we have come a long way. Let's hope we can go all the way.

As I say, it takes time to pass any bill, and this one is a very controversial one. People are afraid of the extent of liability in so many other ways, using this bill as a basis. Therefore, it naturally is a much more complex, complicated, and difficult legislative process. It is a very sensitive one. We have to have everybody stick together.

We appreciate the testimony of you, Janet, and Gloria. We are very grateful for your coming up here. We are grateful for the approach you have taken. Thank you so much.

Mrs. GREGERSON. Thank you for the opportunity. [Applause.]

The CHAIRMAN. Our next witness is Mrs. Pat Broudy, who is a widow of a veteran who participated in the nuclear testing program. She has come to testify on behalf of all the atomic veterans.

We would like to welcome you here, Mrs. Broudy. We appreciate your coming. We look forward to your testimony at this time.

STATEMENT OF ALICE P. BROUDY, REPRESENTING THE NATIONAL ASSOCIATION OF ATOMIC VETERANS, ACCOMPANIED BY THOMAS SAFFER, DEPUTY DIRECTOR

Mrs. BROUDY. I would like personally to thank you on behalf of the National Association of Atomic Veterans and all of its members for the opportunity to appear here today.

The CHAIRMAN. I might mention that we have distributed to the press the Veterans' Administration case summaries of successful cases presented by atomic veterans. They list each case right up through case 12. You will find that some of the decisions were made in 1979, 1980, and 1981. Some were made as early as 1972.

[The material referred to follows:]

VETERANS ADMINISTRATION CASE SUMMARIES OF SUCCESSFUL CASES PRESENTED BY

ATOMIC VETERANS

CASE 1:

Date of Decision: March 21, 1978

The veteran served between 1938 and 1960. He commanded a ship involved in atmospheric testing in the Pacific in 1955 and 1956. He was a participant in 14 tests during the period. Documented exposure to ionizing radiation was 4.984 Rem, but badge radiation level readings on each test were not available. The veteran subsequently was diagnosed as having acute myelocytic leukemia. His claim for service connection was allowed after consideration by the Director of Compensation and Pension. The veteran, who had been rated totally disabled, died in December 1979. His surviving spouse is entitled to receive \$613 monthly in dependency and indemnity compensation.

CASE 2:

Date of Decision: November 23, 1979

The veteran served between 1948 and 1960. The veteran's exposure to 3.445 millirem of gamma radiation during nuclear tests in the Pacific in 1958 has been documented. Malignant lymphoma was diagnosed in 1973. The case was submitted to various experts for opinion as to the nature and causation of the veteran's disease. The Board thereafter concluded that exposure to radiation was a probable factor in the development of his malignancy. Service connection for a malignant reticuloendothelial process was granted and compensation benefits were paid until the veteran's death in June 1980. Currently his surviving spouse receives dependency and indemnity compensation benefits of \$562 monthly. Additionally, one child is in receipt of education benefits of \$342 monthly to pursue an undergraduate degree under chapter 35 of title 38, United States Code.

CASE 3:

Date of Decision: June 7, 1979

The veteran had active duty between 1955 and 1958 and additionally had periods of active duty for training in 1954 and 1963. Service records show that he was exposed to 800 millirem of ionizing radiation as a participant in nuclear tests in the Pacific in 1956. He was hospitalized in December 1977 and the diagnosis of metastatic adenocarcinoma of the lung was made. The Board concluded that, with resolution of reasonable doubt in the veteran's favor, metastatic lung cancer was related to exposure to ionizing radiation. The Board's decision allowed service connection for lung cancer; however, the veteran had died shortly before the decision was released. His children are currently receiving dependency and indemnity compensation of \$301 monthly.

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CASE 4:

Date of Decision: June 30, 1980

The veteran served between 1942 and 1945 and between 1949 and 1960. He participated in atmospheric testing of nuclear weapons in the Pacific in 1958 and had documented exposure to ionizing radiation of 1.870 rems. His death in November 1978 was attributed to acute monomyeloblastic leukemia. His surviving spouse's claim for dependency and indemnity compensation (DIC) was allowed by resolving reasonable doubt in her favor and finding that the veteran's death was service-connected. The surviving spouse received DIC benefits of \$479 monthly.

CASE 5:

Date of Decision: March 11, 1981

The veteran served between 1941 and 1947. His death in 1978 was related to chronic granulocytic leukemia. Records showed that he received a whole body dose of 80 millirem of gamma radiation during nuclear weapons testing in the Pacific in 1946. The Board concluded that the probability of a relationship between his participation in weapons testing and his development of leukemia was sufficient to raise a reasonable doubt, and that doubt was resolved in his favor. Service connection for the disease -- resulting in the payment of accrued compensation benefits based on a claim pending at the veteran's death -- and for the cause of death was established. His surviving spouse received dependency and indemnity compensation of \$438 monthly based on his pay grade of E-3.

CASE 6:

Date of Decision: August 3, 1981

The veteran served between 1954 and 1959. He participated in Operation Teapot in 1955. The maximum known dose of gamma radiation received by other members of his unit was .403 rem; the veteran's actual exposure is not known. In August 1979 the veteran was diagnosed as having chronic granulocytic (myelocytic) leukemia. The Board determined that reasonable doubt should be resolved in favor of the veteran and concluded that exposure to ionizing radiation in service resulted in the development of leukemia. Service connection for chronic myelocytic leukemia was granted. The current rating for his disability is 30% and he receives compensation of \$183 monthly.

CASE 7:

Date of Decision: May 5, 1976

The veteran served from 1940 to 1960. He submitted a claim for service connection of malignant lymphoma in January 1976, alleging that the disability was caused by exposure to ionizing radiation as a pilot during atmospheric testing at the Nevada Test Site in 1951. Exposure to 3.72 rads in October and November 1951 has been documented. With resolution of reasonable doubt in the veteran's

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favor, service connection for malignant lymphoma was granted. The disability was rated 100% and remains so rated. The veteran currently receives compensation of \$1,199 monthly.

CASE 8:

Date of Decision: August 2, 1978

The veteran served between 1953 and 1960 and was present at tests at the Nevada Test Site between July and September 1957. Film badges worn by the veteran show exposure to 655 millirem gamma radiation and 84 mrep beta radiation. The veteran had clinically unexplained symptomatology during that period. In 1976 the diagnosis of leukemic reticuloendotheliosis (hairy cell leukemia) was made. The Board concluded that there is a reasonable probability that the veteran's exposure to radiation was a causative factor in the subsequent development of hairy cell leukemia and service connection was established. He is currently rated as totally disabled and receives compensation of \$1,360 monthly. His dependents have been determined to be eligible for education assistance under chapter 35 of title 38, United States Code.

CASE 9:

Date of Decision: September 29, 1980

The veteran had two periods of service between 1939 and 1959. His death in 1972 was attributed to lymphoblastic leukemia, secondary to metastatic lymphosarcoma. This illness had first been treated in 1970. His surviving spouse filed a claim for dependency and indemnity compensation (DIC) alleging that he had been exposed to nuclear radiation at a Nevada test site in 1954. When this claim was considered by the Board in 1973, service connection for cause of death was denied, in part because service records did not confirm that claimed exposure.

The surviving spouse reopened her claim for DIC in 1977 and later furnished additional evidence. Eventually sufficient records were developed to establish the veteran's presence at a powerful atmospheric test in 1955, although dosimetry data is still unavailable. Submission by the Board of Pathology materials to the Armed Forces Institute of Pathology for study resulted in a revised diagnosis of the veteran's terminal illness; the staff believed that it was myelomonocytic or granulocytic leukemia rather than a lymphoma. The Board thereafter concluded that it was probable that the veteran was exposed to radiation during weapons testing and that the exposure was a factor in the subsequent development of his terminal illness. Service connection for cause of death was allowed. His surviving spouse receives DIC of \$613 monthly.

CASE 10:

Date of Decision: July 16, 1980

The veteran served between 1928 and 1960. It is believed that he participated in two atomic bomb tests, including one in May 1955 at which 195 millirem of

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exposure was documented. Additionally, he received radiation therapy in February and March 1957 with exposure to 3,600 rads directed at the lower lumbar portion of his back. He died of acute myelomonocytic leukemia at age 71 in 1978. Symptoms compatible with a leukemic process were first noted in 1975. The Board concluded that development of the veteran's leukemia could not be disassociated from his exposure to ionizing radiation during weapons testing and radiation therapy in service. Service connection for the cause of the veteran's death was granted. His surviving spouse receives dependency and indemnity compensation of \$761 monthly.

CASE 11:

Date of Decision: March 18, 1980

The veteran had service between 1947 and 1967. He was stationed at Eniwetok from November 1953 to May 1954 and at Indian Springs Air Force Base, Nevada, from April to October 1957 and was a member of a nuclear test group. No dosimetry records were located. A diagnosis of chronic granulocytic leukemia was made in 1971 and the veteran's death from the disease occurred in 1976. The Board found that his exposure to ionizing radiation was a probable factor in the subsequent development of leukemia. Service connection for the cause of the veteran's death was established. The veteran's surviving spouse receives \$479 monthly in dependency and indemnity compensation, based on the veteran's service pay grade of E-5.

CASE 12:

Date of Decision: May 24, 1972

The veteran reported radiation exposure resulting from atomic bomb testing in 1945. Actual exposure data were not received by the Board. The veteran died from acute myelomonocytic leukemia in 1970. The Board concluded that there was a reasonable probability that he incurred sufficient radiation exposure to cause development of leukemia. Service connection for cause of death was granted. The veteran's surviving spouse receives \$525 in dependency and indemnity compensation monthly.

The CHAIRMAN. That was very interesting because in all of our badgering of the Federal Government and all of our requests for cooperation and help, we did not find this out until the last hearing. So these hearings have been very important. Each one brings out something more that helps make the case for this bill.

We are grateful to have you. You take the rest of the time.

Mrs. BROUDY. Thank you, Senator.

I am Pat Broudy, spokesperson for the National Association of Atomic Veterans. I am accompanied by Tom Saffer, who is our deputy director. He is to my left.

The CHAIRMAN. We are happy to have you here, Tom.

Mr. SAFFER. Thank you, Senator.

Mrs. BROUDY. We are grateful for the opportunity to appear before this committee to express our views regarding the important issues of compensation and health research for the victims of nuclear weapons testing. We would extend our special thanks to the chairman for his personal invitation to these hearings.

Some of our veterans were less than 2,000 yards from ground zero at the time of the detonation of the bombs and were ordered to within several hundred yards of ground zero shortly after detonation, thereby exposing them to serious neutron, gamma, and alpha radiation.

Most of the alpha emitters were contained in the soil of the Nevada test site, which contained strontium-90 and plutonium. Plutonium seeks out the bone marrow, the blood-making factory of the body. The alpha emitters, most of which were inhaled and ingested, were not monitored on the film badges as well as the neutron radiation.

The veterans who were used in these experiments were not warned of any dangers of radiation. They were not issued any protective clothing, but participated in the tests in their fatigues.

The purpose of our testimony here today is to try to convince the committee that the atomic veteran is entitled to inclusion in S. 1483, and I think we already have accomplished that.

Only 12 veterans and widows out of 1,800 claims filed for radiation-induced illnesses and deaths have been granted by the Veterans' Administration. This is in spite of the fact that the Center for Disease Control study of SMOKY victims reveals nine cases of leukemia, of an expected three. There is no rationale in the VA's decisions. There were approximately 3,000 men in the test but only about 500 in the study, which makes the figure of 9 even more horrendous.

In the case of leukemia alone, extrapolating the figures of the Center for Disease Control's study of approximately 3,000 men in the SMOKY test to the 250,000 men exposed in the testing, we would find 250 to 300 radiation-caused leukemias alone, not to mention the other cancers.

Trying to obtain Veterans' Administration benefits becomes an adversarial proceeding. The burden of proof is upon the claimant.

Since there is an archaic law that dates back to the Civil War stating that no claimant may hire an attorney to represent him if the claimant pays the attorney more than \$10, it is impossible to be represented by legal counsel before the Veterans' Administra-

tion. There is no appeal to the courts since judicial review is also illegal.

Additionally, lawsuits filed in Federal courts against the Government by veterans or widows have in the past been dismissed because of the *Feres* doctrine—a law which in effect precludes any military person or his family from suing the Government for any injury or death sustained while in the military service.

I will quote from the statement of John H. Thompson, Deputy Assistant General Counsel of the Veterans' Administration, dated March 12, 1982, before this committee:

Suits for claimed injury resulting from exposure to ionizing radiation while in service have been rejected under the *Feres* doctrine. For example, in *Broudy v. United States* * * * the widow of a veteran who was exposed to ionizing radiation at two atmospheric tests and who subsequently died of lymphoma, filed an administrative claim * * *. The ninth circuit, relying on the *Feres* doctrine, dismissed that portion of the suit seeking recovery for negligent exposure to radiation incident to service.

What Mr. Thompson did not say is that *Broudy* will be allowed to sue under the Federal Torts Claims Act because of failure to warn Major Broudy of the possibility of contracting cancer later in life, after his discharge from the Marine Corps in 1960.

I again quote from Mr. Thompson's statement:

* * * The current rate of payment—from the VA—is at least \$1,190 monthly, and can be substantially higher depending on whether the disability is extremely incapacitating and whether the veteran has dependents. Surviving spouses of those veterans * * * are entitled to a monthly stipend determined according to the veteran's rank and service and number of dependents.

The monthly stipend referred to for the surviving spouse is exactly that, a stipend. Most of the men participating in the experiments were in the lower enlisted ranks and, therefore, their widows are at the bottom of the scale and would receive the grand sum of approximately \$300 to \$400 a month.

Three veterans have received 100 percent disability, two of whom have died. Nine widows have received their stipends. Those are approximate numbers. Inasmuch as it is a total of 12 and we know that there were 3 veterans, we assume that there are 9 widows.

Again, quoting Mr. Thompson:

If Congress perceives inadequacies in existing programs, a preferable alternative may be to modify or fine-tune those programs. I can assure you that the Committees on Veterans' Affairs in both the Senate and the House have taken very seriously their oversight responsibilities with respect to these very issues.

The attached testimony of Jack Leavitt before the Senate Committee on Veterans' Affairs dated January 26, 1982, goes into great detail some of the horror stories and abuses our veterans have been subjected to in spite of the priority medical care which in reality does not exist, referred to in previous testimony by John Thompson.

In my own case I have been denied six times in the past 5 years by the Veterans' Administration for widow's benefits.

I would like to quote from the American Bar Association Journal article of January 1982, volume 68:

Some judges also indicated displeasure with the *Feres* doctrine and one judge, who dissented in a ruling against a veteran, called the radiation tests inhuman experimentation. "The international consensus against involuntary human experimentation is clear," wrote Judge John Gibbons of the Court of Appeals for the Third Cir-

cuit in his dissent in *Jaffe v. United States* in November. "That any judicial tribunal in the world in the last fifth of this dismal century would choose to place a class of persons outside the protection against human rights violations provided by the admonitory law of intentional torts is surprising. That it should be an American court will dismay persons the world over concerned with human rights and will embarrass our Government. That this court, which once had a deserved reputation for sensitivity to human rights issues, should undertake to do so is a saddening demonstration of the extent to which it has lost the spirit which once animated our deliberations."

The Defense Nuclear Agency has arbitrarily assigned one-half rad to each of the 250,000 military participants in the nuclear tests, thereby flatly stating that out of the 250,000 participants, only 10 cancers would be expected to have been caused by radiation. See the previous information regarding the Center for Disease Control's study.

Additionally, there is the assumption that all the men were monitored for all types of radiation—alpha, beta, gamma, and neutron. This is totally untrue. At some of these tests the men wore badges; in others, only one per platoon; and in most of the others there were no badges worn at all.

The National Association of Atomic Veterans rejects out of hand the statements of the Defense Nuclear Agency with regard to the radiation exposures assigned to the troops by them.

Another very frightening statement made by the DNA is to the effect that the enactment of legislation to compensate civilian and military participants in nuclear tests would be somehow unpatriotic in that it might interfere with our current nuclear program of weapons development and nuclear power, not to mention the impact on our European allies and the recruitment of workers in the nuclear industry.

It would unnecessarily create pressure to further reduce allowable exposure and cause anxiety amongst citizens living downwind of nuclear testing and the manufacture of nuclear weapons, their storage, and transport.

The DNA would have us believe that compensating the veterans would bankrupt the country. Approximately 1,800 claims have been filed against the VA for service-connected radiation injuries or death. If all of these people were compensated \$500,000 for each death, it would probably only come to less than \$1 billion, and probably an equal amount for the civilians cited in S. 1483.

The 95th Congress passed a bill and it was signed into law by President Carter in October 1977. This is Public Law 95-135, a copy of which is attached.

The essence of this bill is that appropriations were made to compensate inhabitants of Rongelap and Utirik Atolls exposed to fallout from the bravo test in the Marshall Islands and also the Japanese for the loss of their fishing boat, the death of several fishermen, and the fish catch in the amount of \$2 million.

The natives of the islands were paid \$25,000 for each radiation-related injury; adequate care and treatment for any person for any radiation injury or illness and \$100,000 compassionate payment to the heirs or legatees of such individual whose death is directly related to the thermonuclear detonation described above.

A precedent has been established for the payment of compensation and the provision of medical care for radiation injuries and death.

We are discriminated against—we, all of the Nevada and Utah citizens who have been injured by nuclear tests, the uranium miners, the onsite test workers, and all of the troops used as guinea pigs.

I note that the DNA has been singularly silent regarding this law. Why is it that the passage of a bill to compensate American citizens can destroy the American economy and alienate our allies as described previously herein, yet the passage of a law to compensate the citizens of Utirik and Rongelap has created no such concern on the part of the DNA? The citizens of Utirik and Rongelap are not citizens of the United States. Both of these pieces of legislation are designed to accomplish the same end—to compensate radiation victims.

I have read your proposed bill and, for the most part, it is quite sound. There are, however, a few things I would like to bring up.

The burden of proof is upon the victims again. From our experience with the VA, we find this impossible to prove. We have gone through this for many, many years to try to prove our radiation exposure, and we have gotten nowhere.

More than cancers are caused by the exposure to radiation. These include premature aging; high incidence of sterility; birth defects, about 40 percent in a recent study of members conducted by NAAV; and musculoskeletal problems, just to mention a few. We feel this is a mandate to HEW to investigate these other results of radiation exposure.

Also, this bill does not cover the victims of our nuclear tests in the Pacific, our troops, and many Marshall Island citizens, not to mention our troops who occupied Hiroshima and Nagasaki after the war and who have numerous multiple myeloma cancers.

The veterans of the many wars this country has fought have traditionally suffered in silence. They have been used, misused, and abused. The veterans of the radiation testing have not only fought our wars, but they have been asked to lay down their lives on the battlefield of nuclear energy. We are not the enemy. We are your protectors and defenders. May we now be treated as equals?

This concludes my prepared remarks. Thank you, Mr. Chairman and members of the committee, for allowing the National Association of Atomic Veterans to be heard today. We can only request that you have listened to this testimony with your hearts.

The CHAIRMAN. Thank you, Mrs. Broudy.

[Applause.]

The CHAIRMAN. Mrs. Broudy, we will include your entire testimony and the exhibits in the record at this point because I know you summarized part of it.

[The prepared statements with attachments of Mrs. Broudy, follows.]

STATEMENT OF
ALICE P. BROUDY, SPOKESPERSON FOR
THE NATIONAL ASSOCIATION OF ATOMIC VETERANS

Mr. Chairman, Members of the Committee, I wish to thank you for the opportunity to be here today.

I am Pat Broudy, spokesperson for the National Association of Atomic Veterans. We are grateful for the opportunity to appear before this Committee to express our views regarding the important issues of compensation and health research for the victims of nuclear weapons testing. We would extend our special thanks to the Chairman for his personal invitation to these hearings, and to Senators Alan Cranston and Edward Kennedy for their efforts on behalf of the veterans of the armed forces. It was through their efforts that the National Association of Atomic Veterans was invited to testify here today.

The National Association of Atomic Veterans was formed in 1979 to inform and advise the veterans exposed to radiation in the nuclear testing of their rights, and to promote research and treatment of the medical problems of atomic veterans. This organization is composed of veterans and widows of veterans who were exposed in the 40s, 50s and 60s to nuclear testing in the Marshall Islands of the Pacific, at the Nevada Test Site, and those servicemen entering Hiroshima and Nagasaki after the atomic bombings; all told, over 250,000 servicemen were exposed in those experiments.

Servicemen were used at the test sites for a range of purposes, of which the ability to function physically and psychologically after witnessing such a terrifying explosion was the main concern; in other words they were used as experimental objects -- guinea pigs! The Atomic Energy Commission abrogated its duties to the servicemen in favor of

the Department of Defense in allowing the DOD to set reduced limits of radiation exposure for these men, and also to allow the DOD to move the men closer to ground zero than was allowed by the AEC. Some of the men were less than 2,000 yards from ground zero at the time of the detonation and were ordered to within several hundred yards of ground zero shortly after detonation, thereby exposing them to serious neutron and gamma radiation. In addition to neutron and gamma, the men were also exposed to alpha emitters and beta radiation. The men exposed in the Marshall Islands were contaminated with heavy fallout.

Most of the alpha emitters were contained in the soil of the Nevada Test Site. The soil at the site is loose and powdery and a constant wind blows this dust about, thereby lodging itself in the food and water the men ingested and in the air they breathed. Alpha emitters are composed of many agents, the most harmful and deadly of which is Plutonium with a half life of 24,000 years and Strontium ⁹⁰ with a less lengthy half life. Strontium ⁹⁰ is a bone seeker and lodges itself in the skeletal area of the body. Plutonium seeks out the bone marrow, the blood-making factory of the body. A tiny microgram of this material can remain in the body and after years of inactivity causes the cells to divide wildly, thereby cancers are formed. The alpha emitters were not monitored on film badges.

The veterans who were used in these experiments were not warned of any dangers of radiation and were told

that everything was controlled and that they were safe. They were not issued any protective clothing, but participated in the tests in their fatigues and when it became warm, rolled up their sleeves and removed their jackets, thereby exposing more of their bodies to radiation products.

The purpose of our testimony here today is to try to convince the Committee that the atomic veteran is as entitled to inclusion in S 1847 as the other radiation victims, namely, the downwind victims, the uranium miners, the onsite test workers, and the sheep herds.

There is a mistaken conception that the veterans will be compensated and medically cared for in VA hospitals, and the widows of the deceased veterans who were victims of radiation exposure will be compensated by receiving DIC, (Dependency and Indemnity Compensation). In addition to the above, many other benefits were to flow our way, including VA housing loans, and the G.I. Bill for education purposes for dependents and medical care for dependents (CHAMPVA.)

This has not happened for the majority of veterans and widows. Less than one percent of the claims filed for radiation-induced illnesses and death have been granted by the Veterans Administration.

In spite of the fact that the Center for Disease Control's study of SMOKY victims reveals nine cases of leukemia, of an expected three, the VA claim of Runnells, XC 19480984, Docket 81-22 208 of November 5, 1981 was denied. There is no rationale in the VA's decisions. In the case of Donald Coe, this man was given 100 percent

disability for leukemia. In the VA claims case of Orville Kelly, his case was granted while the case of Broudy was denied. Both men died of lymphoma from radiation exposure. In the case of Lyda Ragusa, a widow, her case was granted although she had no proof of her husband's attendance at the nuclear tests. Why is this? What it amounts to is that Coe and Kelly had the benefit of the press and legislative help. Most of our members do not have the strength, the money or the time to pursue these claims for years. They either give up or they die before it is over. In the case of leukemia alone, extrapolating the figures of the Center for Disease Control's study of approximately 3,000 men in the SMOKY test, to the 200,000 men exposed in the testing, we would find 250 to 300 radiation-caused leukemias alone; not to mention all the other cancers our veterans suffered as a result of their radiation exposure. This is a far cry from the DNA's assertion that there would only be 10 cancer deaths (not just leukemias) out of the 250,000 they formerly used as a figure of the number of men participating in the tests.

NAAV took a poll of their members. We sent out 1,000 questionnaires and have received to date 324 responses. Questions asked on the questionnaire were: What would you prefer if you had a choice of benefits? VA? Marshall Island-type bill? Or 1483? 71 percent chose the VA, 51 percent chose the Marshall's bill, and 40 percent chose 1483. The disparity in percentages is due to the fact that some of the members made multiple choices.

When asked "Which do you prefer, VA compensation or special compensation? 59 percent chose special compensation and 41 percent chose VA compensation.

Of those NAAV members who have received or are receiving VA health care, 70 percent expressed dissatisfaction or great dissatisfaction.

Of those NAAV members who have filed VA claims, 56 percent have been denied, 23 percent are still pending, 2 percent have been dropped, 3 percent were awarded as being radiation-related and 16 percent of the claims awarded were for other than radiation.

Trying to obtain VA benefits becomes an adversarial proceeding. The burden of proof is upon the claimant and because there is no marker left by radiation, it is not possible to prove that any particular cancer is caused by radiation. In spite of this, we must prove that cancer is caused by radiation and this is impossible.

Since there is an archaic law that dates back to the Civil War stating that no claimant may hire an attorney to represent him/her if the claimant pays the attorney more than \$10, it is impossible to be represented by legal counsel before the VA. There is no appeal to the courts since judicial review is also illegal. We must take the word of the VA that these cases are not service-connected, just because they say so. No other recourse is available to us. The VA is the only governmental agency that has this restrictive policy. Any other job-related injury suffered by civilians can be appealed to the courts. Senators Gary Hart and Alan Cranston have introduced S. 349 to correct this terrible inequity.

Additionally, lawsuits filed in federal courts against the government by veterans or widows have in the past been dismissed because of the Feres Doctrine -- a law which in effect precludes any military person or his family from suing the government for any injury or death sustained while in the military service, and in addition, providing a shield for the government to hide behind after negligently and deliberately exposing servicemen to radiation experiments, LSD experiments and others. This is not to mention the exposure of the troops in Vietnam to Agent Orange.

I will quote from the statement of John H. Thompson, mentioned earlier, the Deputy Assistant General Counsel of the VA, dated March 12, 1982 before this Committee:

"Suits for claimed injury resulting from exposure to ionizing radiation while in service have been rejected under the Feres doctrine. For example, in Broudy v. United States,.... the widow of a veteran who was exposed to ionizing radiation at two atmospheric tests and who subsequently died of lymphoma, filed an administrative claim..... The Ninth Circuit, relying on the Feres doctrine, dismissed that portion of the suit seeking recovery for negligent exposure to radiation incident to service."

What Mr. Thompson did not say is that the Ninth Circuit Court vacated the District Court's order of dismissal with prejudice and remanded it to the District Court for further proceedings. In other words, ^{to be specific} Broudy will be allowed to sue under the Federal Torts Claims Act because of the failure to warn Major Broudy of the possibility of contracting cancer later in life, after his discharge from the Marine Corps in 1960.

In addition to Broudy, there are other cases in a similar position, Everett v. the United States, Hinkie v. the United States and Wallace v. the United States. None of these cases have been appealed to the Supreme Court by the government. That should say it all. It looks as though the government will have to find another shield to hide behind. In addition to the above, many more lawsuits have been filed by veterans and widows since the Broudy decision came down in November of 1981. Not all veterans and widows can profit from this precedent, however, for various reasons.

I again quote from Mr. Thompson's statement:

"....The current rate of payment (from the VA) is at least \$1,130 monthly, and can be substantially higher depending on whether the disability is extremely incapacitating and whether the veteran has dependents. Surviving spouses of those veterans

..... are entitled to a monthly stipend determined according to the veteran's rank in service and number of dependents."

Again, Mr. Thompson doesn't bother to tell us that to my knowledge, only three of our members have obtained the maximum benefits and two of those died shortly after receiving them.

The "monthly stipend" referred to for the surviving spouse is exactly that, a stipend. Most of the men participating in the experiments were in the lower enlisted ranks and therefore their widows are at the bottom of the scale and would receive the grand sum of approximately \$300 to \$400 a month, if they were fortunate enough to receive that. Less than 10 widows in our organization have received this magnificent sum. All together, including the several veterans who have received benefits and the widows receiving their "stipends", less than one percent of the approximately 1800 claims have been granted and probably never will be unless the VA system is completely overhauled and to quote Mr. Thompson again,

"If Congress perceives inadequacies in existing programs, a preferable alternative may be to modify or fine-tune those programs. I can assure you that the Committee on Veterans' Affairs in both the Senate and the House have taken very seriously their oversight responsibilities with respect to these very issues."

In our opinion, the VA's attitude is "Penny-wise and pound foolish." If the veterans were treated with the proper respect and entitlements they should have, it would encourage more young men to join the military services, which would of course strengthen our military.

The attached testimony of Jack Leavitt before the Senate Committee on Veterans Affairs dated January 26, 1982 goes into great detail some of the horror stories and abuses our veterans

have been subjected to in spite of "the priority medical care" which in reality does not exist, referred to in previous testimony by John Thompson, Deputy Assistant General Counsel for the VA. (Jack Leavitt's testimony is attached hereto.)

In my own case I have been denied six times by the Veterans Administration for widows benefits. I will have the matter reopened at a later date. This has been going on for five years, and is typical of most widows in our organization.

One more quote from Mr. Thompson:

"Finally, I believe that serious deliberation is warranted as to whether this type of proposal, if enacted, would create an untenable precedent for compensating individuals who have been exposed to other environmental hazards."

My feeling is that had the hazards not been created in the first place there would be no need for this hearing today, or for the implementation of this bill.

Radiation experimentation is not an environmental hazard. It is a deliberate, premeditated act. An act of outrage against humanity. We, the United States of America, the country so proud of our history of concern for human rights have destroyed the lives and property of hundreds of thousands of people throughout the world with our monstrous weapons, the Japanese, the people of the Marshall Islands, and finally our own American citizens.

I would like to quote from the American Bar Association Journal article of January 1982, Volume 68:

"Some judges also indicated displeasure with the Feres Doctrine and one judge, who dissented in a ruling against a veteran, called the radiation tests inhuman experimentation. 'The international consensus against involuntary human experimentation is clear,' wrote Judge John Gibbons of the Court of Appeals for the Third Circuit in his dissent in Jaffe v. U.S. (79-1543) in November. 'That any judicial tribunal in the world in the last fifth of this dismal century would choose to place a class of persons outside the

protection against human rights violations provided by the admonitory law of intentional torts is surprising. That it should be an American court will dismay persons the world over concerned with human rights and will embarrass our Government. That this court, which once had a deserved reputation for sensitivity to human rights issues, should undertake to do so is a saddening demonstration of the extent to which it has lost the spirit which once animated our deliberations."

The Defense Nuclear Agency has made several very disturbing statements which should be corrected. (See letter from the General Counsel of the Department of Defense, William H. Taft IV dated September 4, 1981, attached, and also the Congressional Record of October 16, 1981, Senator Cranston's reply to that letter.)

The DNA has arbitrarily assigned a .5 mr to each of the 250,000 military participants in the nuclear tests, thereby flatly stating that out the 250,000 participants only 10 cancers would be expected to have been caused by radiation. Obviously they are assuming that each and every one of those participants was in the identical spot at the same test. It is unfair to make these sweeping assumptions and also tests the credibility of the DNA. (See previous information re the Center for Disease Control's study.)

Additionally, there is the assumption that all the men were monitored for all types of radiation, alpha, beta, gamma and neutron. This is totally untrue. At some of the tests the men wore badges, in others, only one per platoon, and in most of the others there were no badges worn at all. The badges that were worn were defective and fell off easily. These badges only monitored instant gamma and did not attempt to record alpha and neutron, which I have described earlier and which are the most virulent. The NAAV rejects out of hand the statements of the DNA with regard to the radiation exposures assigned to the troops by them.

It has been recently alleged by a Mr. Van Brandon that the government kept two sets of badges, and only recorded the ones with the very lowest readings. The higher ones were destroyed. The Government Accounting Office is investigating this matter at this time.

Another very frightening statement made by the DNA is to the effect that the enactment of legislation to compensate civilian and military participants in nuclear tests would be somehow unpatriotic in that it might interfere with our current nuclear program of weapons development and nuclear power, not to mention the impact on our European allies and the recruitment of workers in the nuclear industry. It would unnecessarily create pressure to further reduce allowable exposure and cause anxiety amongst citizens living downwind of nuclear testing and the manufacture of nuclear weapons, their storage and transport.

Needless to say there is already much anxiety amongst our European allies which has nothing to do with this bill. The citizens bordering the test site know only too well the effects of fallout; the citizens of Harrisburg are frightened, and talk to any person within a ten-mile radius of the Rocky Flats Plutonium Plant in Colorado. Ask them about the plutonium in the soil caused by leaks from the plant and a fire which scattered plutonium over the countryside. Of course, they're scared and with every right. But what has that to do with this bill? Are all these people frightened because of the introduction of this bill? I'm sorry, but those poor people were frightened long before this bill was introduced. This bill is the result of that fright -- not the cause of it.

Is the DNA asking the dead veterans and their widows to sacrifice themselves so that nuclear power and nuclear weapons may proliferate all over the world? Is the DNA asking the citizens of Utah who have lost dear ones to withdraw support of this bill so that the nuclear industry may prosper and that the bombs may continue to be tested in their neighborhood? Why single out the victims of nuclear testing to be the martyrs in this scenario. We have suffered enough!

The DNA would have us believe that compensating the

veterans would bankrupt the country. Approximately 1800 claims have been filed against the VA for service-connected radiation injuries or death, of which less than one percent have been granted. If all of these people were compensated \$500,000 for each death it would probably only come to less than \$1 billion, and probably an equal amount for the civilians cited in S 1483.

We have been warned by former Secretary of the Interior Stuart Udall, that the government would attempt to minimize the problem by exaggerating it out of proportion in an attempt to scare taxpayers away from supporting the atomic veterans. "They will manipulate statistics to the government's advantage, depersonalize the problem to the American people, conveniently lose records, and argue that the cancer problems would have happened anyway."

Natives in the Pacific Islands of Rongelap and Utiirik were exposed to fallout from Test Bravo in 1954. A Japanese fishing boat, the Fukuru Maru, was contaminated with fallout from the same test.

The 95th Congress passed a bill and it was signed into law by President Carter in October of 1977. This is Public Law 95-134. (Copy attached.) The essence of this law is that appropriations were made to compensate inhabitants of Rongelap and Utiirik Atolls and also the Japanese for the loss of their fishing boat, the death of several fishermen and the fish catch in the amount of \$2 million. The natives of the islands were paid \$25,000 for each radiation-related injury; adequate care and treatment for any person for any radiation injury or illness and \$100,000 compassionate payment to the heirs or legatees of such individual whose death is directly related to the thermonuclear detonation described above.

A precedent has been established for the payment of compensation and the provision of medical care for radiation injuries and death. The recipients of our largesse are not citizens of the United States. Does this make them more equal than our own citizens who were exposed to the same radiation fallout from the Bravo test? Hundreds of American servicemen were exposed to that same fallout, but they are told when claiming benefits that they

are not entitled to compensation for their cancers and that they must prove the causation factor. We are discriminated against, we, all of the Nevada and Utah citizens who have been injured by nuclear tests, the uranium miners, the onsite test workers, and all of the troops used as guinea pigs.

I note that the DNA has been singularly silent regarding this law. Why is it that the passage of a bill to compensate American citizens can destroy the American economy and alienate our allies as described previously herein, yet the passage of a law to compensate the citizens of Utiarik and Rongelap has created no such concern on the part of the DNA? Both of these pieces of legislation are designed to accomplish the same end -- to compensate radiation victims.

I have read your proposed bill and for the most part it is quite sound. There are, however, a few things I would like to bring up.

The burden of proof is upon the victims again. We must prove our radiation exposure. And where do we get this proof -- why from the government of course. The fox is guarding the henhouse.

More than cancers are caused by the exposure to radiation. These include early death, high incidence of sterility, genetic problems (about 40 percent in a recent study of members conducted by NAAV), and musculo-skeletal problems, just to mention a few. We feel this is a mandate to HEW to investigate these other results of radiation exposure.

Also, this bill does not cover the victims of our nuclear tests in the Pacific, our troops and many Marshall Island citizens, not to mention our troops who occupied Hiroshima and Nagasaki after the war and who have numerous multiple myeloma cancers. Why is this?

The veterans of the many wars this country has fought have traditionally suffered in silence. They have been used, misused and abused. The veterans of the radiation testing have not only fought our wars but they have been asked to lay down their lives on the battlefield of nuclear energy. We are not the enemy. We are your protectors and defenders. May we now be treated as equals?

This concludes my prepared remarks. Thank you, Mr. Chairman and members of the Committee for allowing the NAAV to be heard today. We can only request that you have listened to this testimony with your hearts and an open mind.

Public Law 95-134
95th Congress

An Act

To authorize certain appropriations for the territories of the United States, to amend certain Acts relating thereto, and for other purposes.

Oct. 15, 1977
[H.R. 6550]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

TITLE I

Sec. 101. (a) Section 2 of the Act of June 30, 1954 (68 Stat. 330), as amended, is further amended by changing "and such amounts as were authorized but not appropriated for fiscal year 1975," to read "and such amounts as were authorized but not appropriated for fiscal years 1975, 1976, and 1977: for fiscal year 1978, \$90,000,000; for fiscal year 1979, \$122,700,000; for fiscal year 1980, \$112,000,000;".

Territories of the United States.
Appropriation authorization.

(b) Section 2 of the Act of June 30, 1954 (68 Stat. 330), as amended, is further amended by (1) deleting "but not to exceed \$10,000,000," and (2) deleting all of the language beginning with the words "which amounts for each fiscal year" up to and including the words "calendar year 1974,".

Trust Territory of the Pacific Islands.
48 USC 1681
note.

Sec. 102. Until the provisions of the covenant to establish a Commonwealth for the Northern Mariana Islands (90 Stat. 263) have been met and approved as required in section 1003(b) thereof, there is hereby authorized to be appropriated \$13,515,000 for the government of the Northern Mariana Islands. When such conditions are met, the appropriations authorized in article VII, section 704, of said covenant shall become effective.

Northern Mariana Islands.
48 USC 1681
note.

Sec. 103. For the rehabilitation and resettlement of Enewetak Atoll in the Trust Territory of the Pacific Islands there is hereby authorized to be appropriated \$12,400,000 (July 1976 prices) plus or minus such amounts, if any, as may be justified by reason of ordinary fluctuations in construction costs as indicated by engineering cost indexes applicable to the types of construction involved.

Enewetak Atoll.

Sec. 104. (a) In addition to appropriations authorized to compensate inhabitants of Rongelap Atoll and Utirik Atoll in the Trust Territory of the Pacific Islands for radiation exposure sustained by them as a result of a thermonuclear detonation at Bikini Atoll in the Marshall Islands on March 1, 1954, pursuant to the Act of August 22, 1964 (78 Stat. 598), effective October 1, 1977, there are authorized to be appropriated such amounts as may be necessary to carry out the provisions of this section and the Secretary of the Interior (hereafter in this section referred to as the "Secretary") is authorized and directed to make the payments as hereafter provided in this paragraph to individuals, or to their heirs or legatees, as the case may be, who were on March 1, 1954, residents on Rongelap Atoll or Utirik Atoll in the Marshall Islands:

Rongelap Atoll and Utirik Atoll.
Radiation victims.

(1) The Secretary shall pay \$25,000 to each such individual from whom the thyroid gland or a neurofibroma in the neck was surgically removed, or who has developed hypothyroidism, or who develops a radiation-related malignancy, such as leukemia.

(2) The Secretary shall pay \$1,000 to each individual who, on such date, was a resident on Utirik Atoll.

Payments to heirs or legatees.

STAT. 84

PUBLIC LAW 96-205—MAR. 12, 1980

Public Law 96-205
96th Congress

An Act

Mar. 12, 1980
[P.L. 96-205]

To authorize appropriations for certain insular areas of the United States, and for other purposes.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,*United States
insular areas
appropriation
authorization.

TITLE I—TRUST TERRITORY OF THE PACIFIC ISLANDS

USC 1681
et seq.

Sec. 101. Section 2 of the Act of June 30, 1954 (68 Stat. 330), is amended by inserting after "for fiscal year 1980, \$112,000,000," the following: "for fiscal years after fiscal year 1980, such sums as may be necessary, including, but not limited to, sums needed for completion of the capital improvement program, for a basic communications system, and for a feasibility study and construction of a hydroelectric project on Ponape."

Sec. 102. The Act entitled "An Act to authorize certain appropriations for the territories of the United States, to amend certain Acts relating thereto, and for other purposes" (81 Stat. 1139, Public Law 95-134) is amended by inserting after section 105, the following new section:

radiation
injury,
illness, and
medical care.
USC 1681
et seq.

"Sec. 106. (a) In addition to any other payments or benefits provided by law to compensate inhabitants of the atolls of Bikini, Eniwetok, Rongelap, and Utirik, in the Marshall Islands, for radiation exposure or other losses sustained by them as a result of the United States nuclear weapons testing program at or near their atolls during the period 1946 to 1958, the Secretary of the Interior (hereinafter in this section referred to as the "Secretary") shall provide for the people of the atolls of Bikini, Eniwetok, Rongelap, and Utirik and for the people of such other atolls as may be found to be or to have been exposed to radiation from the nuclear weapons testing program, a program of medical care and treatment and environmental research and monitoring for any injury, illness, or condition which may be the result directly or indirectly of such nuclear weapons testing program. The program shall be implemented according to a plan developed by the Secretary in consultation with the Secretaries of Defense, Energy, and Health, Education, and Welfare and with the direct involvement of representatives from the people of each of the affected atolls and from the government of the Marshall Islands. The plan shall set forth, as appropriate to the situation, condition, and needs of the individual atoll peoples:

"(1) an integrated, comprehensive health care program including primary, secondary, and tertiary care with special emphasis upon the biological effects of ionizing radiation;

"(2) a schedule for the periodic comprehensive survey and analysis of the radiological status of the atolls to and at appropriate intervals, but not less frequently than once every five years, the development of an updated radiation dose assessment, together with an estimate of the risks associated with the predicted human exposure, for each such atoll; and

"(3) an education and information program to enable the people of such atolls to more fully understand nuclear radiation and its effects;

"(4) The Secretary shall submit the plan to the Congress not later than January 1, 1981, together with his recommendations, if any, for further legislation. The plan shall set forth the specific agency responsible for implementing the various elements of the plan. With respect to general health care the Secretary shall consider, and shall include in his recommendations, the feasibility of using the Public Health Service. After consultation with the Chairman of the National Academy of Sciences, the Secretary of Energy, the Secretary of Defense, and the Secretary of Health, Education, and Welfare, the Secretary shall establish a scientific advisory committee to review and evaluate the implementation of the plan and to make such recommendations for its improvement as such committee deems advisable.

"(5) At the request of the Secretary, any Federal agency shall provide such information, personnel, facilities, logistical support, or other assistance as the Secretary deems necessary to carry out the functions of this program; the costs of all such assistance shall be reimbursed to the provider thereof out of the sums appropriated pursuant to this section.

"(6) All costs associated with the development and implementation of the plan shall be assumed by the Secretary of Energy and, effective October 1, 1980, there are authorized to be appropriated to the Secretary of Energy such sums as may be necessary to achieve the purposes of this section.

"(7) The Secretary shall report to the appropriate committee of the Congress, and to the people of the affected atolls annually, or more frequently if necessary, on the implementation of the plan. Each such report shall include a description of the health status of the individuals examined and treated under the plan, an evaluation of the scientific advisory committee, and any recommendations for improvement of the plan. The first such report shall be submitted not later than January 1, 1982."

SEC. 103. Paragraph 101(a)(3) of Public Law 95-134 (91 Stat. 1221) is hereby amended by deleting all after the word "cause" and inserting in lieu thereof the following words: "except if such an individual has been compensated under paragraph (1) of this section."

SEC. 104. Notwithstanding any other provision of law, except in cases in which the Federal program is terminated with respect to all recipients under the program, Federal programs in the fields of education and health care shall not cease to apply to the Trust Territory of the Pacific Islands or any successor government or governments, nor shall participation in any applicable Federal programs in the fields of education and health care by the Trust Territory of the Pacific Islands or any successor government or governments be denied, decreased or ended, either before or after the termination of the trusteeship, without the express approval of the United States Congress.

TITLE II—NORTHERN MARIANA ISLANDS

SEC. 201. (a) The salary and expenses of the government comptroller for the Northern Mariana Islands shall be paid from funds appropriated to the Department of the Interior.

Scientific
advisory
committee

Assistance
Federal
agencies

Development
and
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Rongelap, Utirik,
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2018.

(3) Where circumstances warrant, as he shall determine, the Secretary shall pay an amount not in excess of \$25,000 as he determines to be an appropriate compassionate compensation to each such individual who has suffered any physical injury or harm from a radiation-related cause ~~but who is not an individual described in paragraph (1) (H.R. No. 105-2896-205)~~

(4) In addition to the payments provided in paragraphs (1), (2), and (3) of this subsection, the Secretary shall provide by appropriate means adequate medical care and treatment for any person who has a continuing need for the care and treatment of any radiation injury or illness directly related to the thermonuclear detonation referred to in paragraph (a) of this section. The costs of such medical care and treatment shall be assumed by the Administrator of the Energy Research and Development Administration.

(5) Not later than December 31, 1980, the Secretary shall report to the appropriate committees of the United States Congress for their consideration what, if any, additional compassionate compensation may be justified for those individuals continuing to suffer from injuries or illnesses directly related to radiation resulting from the thermonuclear detonation referred to in paragraph (a) of this section.

In the case of the demise of any individual entitled to receive payment under this section who expires before receiving such payment, the Secretary shall pay the amount which that individual would have been entitled to receive under this section to the heirs or legatees of such individual, in accordance with an appropriate method of distribution per stirpes, and not per capita. Where the demise of any individual eligible for payment under paragraph (1) or (3) supra is directly related to the thermonuclear detonation referred to in paragraph (a) of this section, the Secretary may make an additional compassionate payment not to exceed \$100,000 to the heirs or legatees of such individual. In determining the amount of such payment the Secretary shall consider, but is not limited to, the following: any payments which the deceased has received or would have been eligible to receive under this section, and loss of support, services, or contributions to the heirs or legatees.

(b) For the use of each of the island communities of Rongelap, Utirik, and Bikini Atolls there is authorized to be appropriated \$100,000. Such funds are to be paid by the Secretary, in conjunction with guidelines to be established by the High Commissioner of the Trust Territory of the Pacific Islands, for such community purposes as the municipal councils of such island communities may direct.

(c) A payment made under the provisions of this section shall be in full settlement and discharge of all claims against the United States arising out of the thermonuclear detonation on March 1, 1954.

(d) The decisions of the Secretary in allowing or denying any claim for payment under this section shall be final and conclusive on all questions of law and fact and not subject to review by any other official of the United States, or by any court by mandamus or otherwise.

(e) The Secretary is authorized to make such rules and regulations as he determines necessary to carry out the provisions of this section.

SEC. 105. In addition to amounts heretofore authorized pursuant to the Micronesian Claims Act of 1971 (85 Stat. 96), there are hereby authorized to be appropriated to the Secretary of the Interior such sums as may be necessary to satisfy all adjudicated claims and final awards made by the Micronesian Claims Commission to date under

title I and title II of said 1971 Act, for full payment of such awards: *Provided*, That no sums appropriated pursuant to this section may be paid on awards pursuant to title I of said 1971 Act until, subsequent to the date of enactment of this section, the Government of Japan has provided to the Government of the Trust Territory of the Pacific Islands a contribution, which contribution may be in goods and services, which has a value as determined by the Secretary of the Interior equivalent to not less than 50 per centum of the total awards made pursuant to title I of said 1971 Act less \$10,000,000 from such total: *Provided further*, That prior to making any payment on an award pursuant to either title I or title II of said 1971 Act, the Secretary shall review such award and determine whether any portion of such award constitutes interest not authorized to be awarded under the said 1971 Act and shall exclude from his payment such amounts as he determines constitute such interest. The Secretary's determination of the proportion of any award which constitutes such interest and the proportion which constitutes value shall be final and shall not be subject to judicial review.

Sec. 106 (am. 3-1-96-205-3-12-1980)

TITLE II

SEC. 201. (a) There is hereby authorized to be appropriated to the Secretary of the Interior (hereinafter referred to as the Secretary), not to exceed \$15,000,000, for a grant to the Government of Guam to assist in typhoon rehabilitation, upgrading and construction of public facilities, and maintenance of essential services.

(b) Funds provided under this Act may be used by Guam as its matching share for Federal programs and services.

(c) The Government of Guam in carrying out the purpose of this Act may utilize, to the extent practicable, the available services and facilities of agencies and instrumentalities of the United States Government on a reimbursable basis. Reimbursements may be credited to the appropriation or fund which provided the services and facilities. Agencies and instrumentalities of the United States Government may, when practicable, make available to the Government of Guam upon request of the Secretary such services and facilities as they are equipped to render or furnish, and they may do so without reimbursement if otherwise authorized by law.

(d) The Secretary may place such stipulations as he deems appropriate on the use of funds appropriated pursuant to section 201(a).

SEC. 202. Section 2 of the Guam Development Fund Act of 1968 (82 Stat. 1172; 48 U.S.C. 1428) is amended by changing "SEC. 2" to "Sec. 2. (a)" and adding at the end thereof the following new subsection (b):

"(b) In addition to the appropriations authorized in subsection (a), \$1,000,000 is authorized to be appropriated to the Secretary of the Interior to be paid to the Government of Guam annually for five fiscal years commencing in fiscal year 1978 to carry out the purposes of this Act."

SEC. 203. The Organic Act of Guam (64 Stat. 394) as amended (48 U.S.C. 1421 et seq.) is further amended:

(a) by deleting from the first sentence of section 9-A(a) everything after the words "government of Guam"; adding a period after "Guam"; and inserting the following sentence: "Effective October 1, 1977, the salary and expenses of the Comptroller's office shall be paid from funds authorized to be appropriated to the Department of the Interior.";

H 6804

CONGRESSIONAL RECORD — HOUSE

October 2, 1981

SERVICEMEN'S GROUP LIFE INSURANCE AND VETERANS' GROUP LIFE INSURANCE
 SEC. 12. (a) Section 167 of title 38, United States Code, relating to the Servicemen's Group Life Insurance program, is amended—

(1) in the first sentence of subsection (a)—
 (A) by striking out "\$30,000" and inserting in lieu thereof "\$35,000"; and
 (B) by inserting "\$30,000, \$35,000, \$20,000," after "(B) to be insured in the amount of";

(2) in the first sentence of subsection (c)—
 (A) by inserting "\$30,000, \$35,000, \$20,000," before "\$15,000, \$10,000, or \$5,000"; and
 (B) by inserting "\$35,000, \$30,000, \$25,000," before "\$20,000, \$15,000, or \$10,000"; and

(3) by adding at the end thereof the following new subsection:

"(d) Notwithstanding any other provision of this section, any member who, on the effective date of this subsection, is assigned to, or who upon application would be eligible for assignment to, the Retired Reserve of a uniformed service, may obtain increased insurance coverage under this subsection up to a maximum of \$30,000 in increments of \$5,000, if the member (1) is insured under this subsection on such effective date or, within one year after such effective date, reinstates insurance which lapsed before such date for nonpayment of premiums; and (2) submits, within one year after such effective date, a written application for increased coverage to the office established pursuant to section 790(b) of this title."

(b) Section 777(a) of such title, relating to Veterans' Group Life Insurance, is amended—

(1) by striking out "or \$30,000 only" in the first sentence and inserting in lieu thereof a comma and "\$30,000, \$35,000, \$20,000, or \$35,000 only";

(2) by striking out "\$30,000" in the second sentence and inserting in lieu thereof "\$35,000"; and

(3) by striking out "\$30,000" each place it appears in the fourth sentence and inserting in lieu thereof "\$35,000";

(c) The amendments made by subsections (b) and (3) shall become effective on the first day of the first month which begins at least sixty days after the date of the enactment of this Act.

Amend the title so as to read: "An Act to amend title 38, United States Code, to extend the authority to provide certain contract hospital care and medical services in Puerto Rico, the Virgin Islands, and other territories, to remove a limitation on certain dental care entitlement, to extend the period for Vietnam-era veterans to request readjustment counseling, to clarify eligibility for delimiting period extensions for vocational rehabilitation and OI bill benefits based on disability, to extend the program of veterans' readjustment appointments in the Federal Government, to extend for two years for certain educationally disadvantaged, unskilled or unemployed Vietnam-era veterans the period of time in which OI bill benefits may be used for the pursuit of certain training, and to provide certain health-care eligibility and outpatient care priority to veterans for disabilities linked to their exposure to Agent Orange, other specified toxic substances in Vietnam, or to nuclear weapons test radiation; to authorize expansion of an epidemiological study regarding veterans exposed to Agent Orange; and for other purposes."

House amendments to the Senate amendments: In lieu of the matter proposed to be inserted by the Senate amendment to the text of the bill, insert the following:

SHORT TITLE AMENDMENTS TO TITLE 38, UNITED STATES CODE

SECTION 1. (a) This Act may be cited as the "Veterans' Health Care, Training, and Small Business Loan Act of 1981."

(b) Except as otherwise expressly provided, whenever in this Act an amendment or repeal is expressed in terms of an amendment to, or repeal of, a section or other provision, the reference shall be considered to be made to a section or other provision of title 38, United States Code.

TITLE I—HEALTH CARE

EXTENSION OF AUTHORITY TO PROVIDE CERTAIN CONTRACT HOSPITAL CARE AND MEDICAL SERVICES IN PUERTO RICO, THE VIRGIN ISLANDS, AND OTHER TERRITORIES

SEC. 101. Section 601(4)(C)(v) is amended by striking out "December 31, 1981" and inserting in lieu thereof "September 30, 1982."

MEDICAL CARE FOR DISABILITIES THAT MAY BE RELATED TO EXPOSURE TO AGENT ORANGE, CERTAIN OTHER HAZARDOUS SUBSTANCES, OR NUCLEAR RADIATION

SEC. 102. (a) Section 610 is amended—

(1) in subsection (a)—
 (A) by striking out "and" at the end of clause (4);

(B) by redesignating clause (5) as clause (4); and
 (C) by inserting after clause (4) the following new clause (5):

"(5) a veteran who meets the conditions of subsection (e) of this section; and"

(2) by adding at the end the following new subsection:

"(e)(1)(A) Subject to paragraphs (3) and (3) of this subsection, a veteran—

(i) who served on active duty in the Republic of Vietnam during the Vietnam era, and

(ii) who the Administrator finds may have been exposed during such service to dioxin or was exposed during such service to a toxic substance found in a herbicide or defoliant used in connection with military purposes during such service, may be furnished hospital care or nursing home care under subsection (a)(9) of this section for any disability, notwithstanding that there is insufficient medical evidence to conclude that such disability may be associated with such exposure.

"(B) Subject to paragraphs (3) and (3) of this subsection, a veteran who the Administrator finds was exposed while serving on active duty to ionizing radiation from the detonation of a nuclear device in connection with such veteran's participation in the test of such a device or with the American occupation of Hiroshima and Nagasaki, Japan, during the period beginning on September 11, 1945, and ending on July 1, 1946, may be furnished hospital care or nursing home care under subsection (a)(9) of this section for any disability, notwithstanding that there is insufficient medical evidence to conclude that such disability may be associated with such exposure.

"(C) Hospital and nursing home care may not be provided under subsection (a)(9) of this section with respect to a disability that is found, in accordance with guidelines issued by the Chief Medical Director, to have resulted from a cause other than an exposure described in subparagraph (A) or (B) of paragraph (1) of this subsection.

"(3) Hospital and nursing home care and medical services may not be provided under or by virtue of subsection (a)(9) of this section after the end of the one-year period beginning on the date the Administrator submits to the appropriate committee of Congress the first report required by section 307(b)(2) of the Veterans Health Programs Extension and Improvement Act of 1979 (Public Law 96-181; 93 Stat. 1098)."

(b) Clause (4) of section 612(1) is amended to read as follows:

"(4) To any veteran (A) who is a former prisoner of war, or (B) who is eligible for care under section 610(a)(5) of this title."

OUTPATIENT DENTAL CARE

SEC. 103. (a) Subsection (b) of section 612 is amended—

(1) by inserting "(1)" after "(b)";

(2) by redesignating clause (1) as clause (A);

(3) by striking out clause (2) and inserting in lieu thereof the following:

"(B) which is service-connected, but not

compensable in degree, but only if—

"(i) the dental condition or disability is shown to have been in existence at time of discharge or release from active military, naval, or air service;

"(ii) the veteran had served on active duty for a period of not less than 180 days immediately before such discharge or release;

"(iii) application for treatment is made within 90 days after such discharge or release, except that (1) in the case of a veteran who received active military, naval, or air service within 90 days after the date of such veteran's prior discharge or release from such service, application may be made within 90 days from the date of such veteran's subsequent discharge or release from such service; and (ii) if a disqualifying discharge or release has been corrected by competent authority, application may be made within 90 days after the date of correction; and

"(iv) the veteran's certificate of discharge or release from active duty does not bear a certification that the veteran was provided, within the 90-day period immediately before the date of such discharge or release, a complete dental examination (including dental X-rays) and all appropriate dental services and treatment indicated by the examination to be needed";

(4) by redesignating clauses (3), (4), (5), (6), (7), and (8) as clauses (C), (D), (E), (F), (G), and (H), respectively;

(5) by designating the second sentence of such subsection as paragraph (3) and by striking out "clause (3)" in such sentence and inserting in lieu thereof "clause (B) of paragraph (1)";

(6) by designating the third sentence of such subsection as paragraph (3);

(7) by designating the fourth sentence of such subsection and all that follows in such subsection as paragraph (4); and

(8) by striking out "pursuant to this subsection" in the last sentence and inserting in lieu thereof "pursuant to this paragraph."

(b)(1) Section 612(c) is amended by striking out "clause (3)" and inserting in lieu thereof "paragraph (1)(F)";

(2) The last sentence of section 612(f) is amended by striking out "subsection (b)(7)" and inserting in lieu thereof "clause (G) of subsection (b)(1)";

(c)(1) Section 612(b)(1)(B)(i)(I) of title 38, United States Code, shall apply only to veterans discharged or released from active military, naval, or air service after August 12, 1981.

(2) A veteran who before August 13, 1981—

(A) was discharged or released from active military, naval, or air service,

(B) received such service within one year after the date of such discharge or release, and

(C) was discharged or released from such subsequent service,

may be provided dental services and treatment in the same manner as provided for in section 612(b) of title 38, United States Code, if the veteran is otherwise eligible for

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I believe, in part, that the view of my House colleagues on this point was shaped by a belief—held by the VA itself I might add—that the VA would in fact take appropriate steps once information becomes available and that the proposals passed by the Senate might somehow interfere with the agency's actions in this regard by requiring specific actions that might not be appropriate at a particular time.

Obviously, I did not agree with this assessment, believing instead that the Senate-passed provisions would have allowed the agency sufficient flexibility while insuring the public that specified actions would be taken within certain timeframes. However, although my view in this regard did not prevail, I intend to monitor very closely the VA's actions under the provision in the compromise agreement and, if it appears that more specific legislative guidance is necessary, I will push for its adoption.

Mr. President, another Senate-passed provision that I regret that the compromise agreement does not contain is the mandated VA study was one that the Senator from South Dakota (Mr. Fazzolari) authored to amend the study mandate so as to insure that the study of health effects of exposure to agent orange or other toxic substances in Vietnam would include a study of the genetic and psychological effects of such exposure. My colleagues in the House were unwilling to accept this provision.

However, I would note that the term "health," which is used in the study mandate includes genetic and psychological health aspects, and it is certainly my clear understanding that the genetic and psychological aspects of Vietnam veterans' health will be explored in the study. On the other hand, the specific inclusion of these terms in the study mandate could have generated confusion about the need or desirability for study of other, nonspecified health effects of the particular exposures in question.

TARGETED DELIMITING DATE EXTENSION

Mr. President, the compromise agreement includes a major new provision that should provide significant assistance for many Vietnam-era veterans—those who are educationally disadvantaged, unskilled, or unemployed—particularly in conjunction with the readjustment counseling program. It would provide up to a 2-year extension of the 10-year period within which eligible veterans must use their GI bill benefits—the so-called "delimiting period"—for those Vietnam-era veterans who do not have high school diplomas and for those who could benefit from participation in apprenticeship or other on-the-job training programs or vocational objective training.

Under the provision in the compromise agreement, a Vietnam-era veteran would have an additional one-shot period of 2 years—from January 1, 1982, until December 31, 1983—in which to use his or her GI bill eligibility for apprenticeship or on-the-job training programs or a vocational objective program if the Administrator determines that the veteran is

In need of such a program in order to achieve a suitable occupational or vocational objective; or for pursuit of a secondary education if the veteran does not have a high school diploma or the equivalent. Following the completion of training, the Administrator would be required to furnish appropriate employment counseling to the veteran.

Mr. President, I am very pleased that this provision, which is also derived from my bill, S. 458, is included in the compromise agreement. Indeed, it is particularly gratifying to me since the provision in S. 458 was drawn directly from a similar proposal I made last Congress that the Senate approved in S. 870 as a substitute amendment to H.R. 5288, but which the House rejected in the context of enactment of the Veterans' Rehabilitation and Education Amendments of 1980—Public Law 96-468. As with the VRA-authority extension that I will discuss next, this provision should be of particular benefit to those veterans seeking assistance from vet centers who have employment-related difficulties.

I believe that the approach adopted in the compromise agreement—a one-time opportunity for those Vietnam-era veterans who continue to have problems making a successful and complete transition to productive civilian lives—can be a very effective way to reach these Vietnam-era veterans, especially in conjunction with the readjustment counseling program.

RETENTION OF THE VETERANS' READJUSTMENT APPOINTMENT AUTHORITY

Mr. President, I am very pleased that the compromise agreement contains a provision that would extend for 3 years the authority—set forth in section 2014 (b) of title 38—to provide accepted appointments in the Federal civil service to certain Vietnam-era veterans who are disabled or who are educationally disadvantaged. This provision is based on a provision in S. 458 that I authored earlier this year.

The use of this veterans' readjustment appointment—VRA—authority has been very successful, at no significant cost to the Federal Government, in placing in Federal jobs Vietnam-era veterans who are educationally disadvantaged or disabled. Since the program's inception in 1970, VRAs have provided accepted appointments for more than 180,000 Vietnam-era veterans.

Under the VRA program, eligible veterans may be given extended—noncompetitive—appointments in the civil service with a view toward their being provided a program that combines education and training with the opportunity for a regular career appointment. The success of the program is evidenced, in part, by the high Government-wide retention rate. According to the Office of Personnel Management, about 75 percent of veterans who were initially appointed under the VRA authority continued to be employed in the Federal Government after expiration of their VRA appointments.

Although I originally proposed a 2-year extension of the VRA authority in S. 458, during committee development

of this legislation I urged an additional year's extension as a reflection of my view that the VRA authority can serve as a very valuable adjunct to the VA's readjustment counseling program, for which the eligibility period is also being extended 2 years by the compromise agreement. Many of the veterans seeking assistance through the vet centers are experiencing employment difficulties, and the continued availability of the VRA authority for the 3 years of the readjustment counseling eligibility extension period should provide a useful tool that vet center staff can use to assist many of the veterans coming to the centers with employment problems.

MEDICAL CARE FOR SUBSISTENCE THAT MAY BE RELATED TO EXPOSURE TO NUCLEAR RADIATION

Mr. President, the compromise agreement provides veterans who are suffering from disabilities that might be related to their exposure during active-duty to nuclear radiation with the same expanded VA health-care eligibility as I have discussed with respect to Vietnam veterans with disabilities they believe are related to dioxin exposure.

Expanding eligibility for this group of veterans—those exposed to nuclear radiation, either during the testing of a nuclear device or in Hiroshima or Nagasaki during the occupation period following World War II—is equally as important an accomplishment in this legislation as the expansion of eligibility for Vietnam veterans. Approximately 250,000 active-duty Armed Forces personnel participated in the nuclear test program in the 1940's, 1950's, and 1960's and an estimated 25,000 others were stationed in Hiroshima or Nagasaki following World War II.

For many radiation-exposed individuals the continuing difficulty they and their survivors face in pursuing claims in connection with health problems they believe are related to radiation exposure is particularly frustrating in light of the extended period of time that has elapsed since the exposure occurred.

However, despite this time lapse and the great many studies of the effects of exposure to ionizing radiation—the General Accounting Office pointed out in its January 2, 1981, report entitled "Problems in Assessing the Cancer Risks of Low-Level Ionizing Radiation Exposure," EMD-81-1, that some 80,000 articles have been published internationally on this subject—there still are many questions that must be answered before the VA will be able to develop a uniform practice for resolving radiation-related claims that will be accepted as adequate and appropriate by veterans exposed to radiation during their service, survivors of those veterans, and others concerned with this issue.

In the interim, I believe it is fully appropriate, for many of the same reasons I described earlier with respect to veterans exposed to dioxin in Vietnam, to provide these VA health care for disabilities that might be associated with exposure to radiation.

Mr. President, before concluding my remarks on this provision, I want to take a moment to reassure the Department of Defense that this provision is, as I have

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described it, a limited, interim measure that does nothing more than provide eligibility for VA health care for certain veterans for disabilities they believe may be related to their exposure to radiation during their military service. Providing this eligibility does not establish that the disabilities in question are, in fact, service-connected disabilities.

Indeed, if such a finding could be made, there would be no need for a provision such as is included in the compromise agreement, and that is why the law itself expressly declares that eligibility is being provided "notwithstanding that there is insufficient medical evidence to conclude that such disability may be associated with such exposure." Rather, the support for this new eligibility is founded on the view that some of the disabilities for which care is being sought may, in time, be determined to be service-connected disabilities but, in the interim, veterans suffering current health problems should be provided access to VA health care without reference to whether they can afford the cost of the care—the criterion that they would have to meet under current law.

The practical effect of this provision is that these veterans whose disabilities have not been adjudicated to be service-connected but who were exposed to nuclear radiation during their service—a hazard known to cause health problems in some instances—will be given priority over other veterans who are seeking VA health care for non-service-connected disabilities.

Mr. President, I make these points because in letters to the two committee chairmen (Mr. Smathers and Mr. Monroney), dated September 4—a copy of one of which I will ask be placed in the Record—the General Counsel of the Department of Defense suggested, officially on behalf of the administration, that the adoption by Congress of a provision providing eligibility for basic VA health care to veterans exposed to nuclear radiation has the potential "to be seriously damaging to every aspect of the Department of Defense's nuclear weapons and nuclear propulsion programs."

As if the specter of such consequences were not serious enough, the letter goes on in its extraordinary hyperbole to suggest that this provision—and I remind my colleagues that the provision provides access to VA health care for veterans exposed to nuclear radiation without reference to their ability to pay for the care, nothing more—if enacted could adversely affect our relations with our European allies, impact upon the civilian nuclear power industry, and raise questions regarding the use of radioactive substances in medical diagnosis and treatment.

Mr. President, as the author of the provision, I am simply astounded that such wild and effects could be ascribed to it—much less a provision as I have described for the record, therefore, let me state clearly that these suggestions are, in my view, absurd.

Moreover, Mr. President, I want to be clear that I am not as sanguine as the General Counsel of the Department of Defense with reference to the actual

long-term health effects for those veterans who were exposed to nuclear radiation during the testing program or the occupation of Hiroshima or Nagasaki following World War II. I respectfully disagree with the twin assumptions underlying his conclusions that "most exposures to Department of Defense personnel during the tests were quite low" and that "(all) [who have considered the health effects of exposure to low levels of ionizing radiation] agree that the increased risk associated with exposure to radiation at the levels experienced by the selected veterans is quite low."

In fact, it is my experience that these are precisely the sorts of questions that we need answers to—who was exposed to what amounts and kinds of radiation during the testing program or in Hiroshima or Nagasaki and what are the long-term health effects of that exposure? Indeed, just because we do not now have definitive answers to these and other questions is the reason that I believe, and the Congress has concluded, that it is appropriate to provide eligibility for VA health care on an interim basis for the treatment of the disabilities of these veterans that they believe might be related to their exposure to nuclear radiation.

Mr. President, the last point that I want to raise about the Department of Defense letter is a point that is nowhere mentioned in the letter—namely, the fact that the provision in the compromise agreement provides health care eligibility not only for veterans exposed to nuclear radiation but for those exposed to dioxin and other toxic substances during service in Vietnam. Since, in the Department of Defense's view, authorizing eligibility for health care for those veterans exposed to radiation would create "the unmistakable [sic] impression" that exposure to radiation "is a significant health hazard," it would seem to follow that a similar impression would be created with regard to exposure to dioxin and the other toxic substances.

Since the Department of Defense letter is silent on this point, I am left to wonder whether the Department and the administration hold such a view or whether, in the haste to deal with nuclear radiation, the rest of the provision was overlooked.

In any event, I have exactly the same view with reference to dioxin and the other specified hazards as I do regarding exposure to nuclear radiation. At this time, we do not have sufficient scientific or medical information to answer the many questions relating to the health effects of exposure to the specified hazards and, as long as we do not, it is fully appropriate, I believe, to authorize eligibility for VA health care for those disabilities that cannot be determined to be unrelated to the exposure in question.

Mr. President, I ask that a copy of the September 4 letter from the General Counsel of the Department of Defense to the chairman of the Committees on Veterans' Affairs be inserted in the Record at this point.

The letter follows:

GENERAL COUNSEL OF THE
DEPARTMENT OF DEFENSE
Washington, D.C., September 4, 1981

Hon. ALAN K. BARKER,
Chairman, Veterans Affairs Committee,
U.S. Senate
Washington, D.C.

DEAR MR. CHAIRMAN: The purpose of this letter is to provide the views of the Department of Defense on one aspect of H.R. 3499, 97th Congress, a bill "to amend title 38, United States Code, to extend the Vietnam veterans' readjustment counseling program, to provide medical care for Vietnam veterans exposed to herbicide defoliants (including Agent Orange), to recover the cost of certain health care provided by the Veterans' Administration, and for other purposes."

H.R. 3499 was passed by the House on June 3, 1981. As passed by the House, the bill did not include any reference to radiation. The Senate bill on this subject, S. 921, as reported out of committee, was similarly silent on this point. However, on passage of the legislation by the Senate (S.R. 3499, amended), provisions in section 3 relating to medical care for veterans who participated in the atmospheric nuclear weapons testing program hereinafter referred to as "selected veterans," were added as a result of a Senate floor amendment. Thus, this amendment has not had the benefit of hearings or the comments of interested agencies.

The Department of Defense has consistently attempted to assure that legislation relating to Department of Defense programs and personnel is fair and reasonable to both veterans and taxpayers. H.R. 3499, in its present form, is not.

Through programs administered by the Veterans' Administration, Congress has established a comprehensive, no fault system of disability compensation for veterans who suffer service connected disabilities. Medical care and treatment in Veterans' Administration facilities are provided as part of that compensation. Veterans who are unable to pay for necessary health care may, even though they suffer no service connected disability, also be eligible for medical care and treatment in Veterans' Administration facilities. We have every reason to believe that the Veterans' Administration administers both of these programs in a fair and even handed manner and that all veterans have an equal opportunity to establish their rights to benefits.

Legislation such as H.R. 3499 which singles out a group of selected veterans for special benefits above and beyond that available to all veterans should only be adopted when there is a credible medical or scientific basis for affording such treatment. In the case of the provisions of H.R. 3499 concerned with radiation exposure there is no such basis.

Since December 1977 the Department of Defense, acting through the Department of Energy, has been engaged in an extensive research program designed, in part, to identify the Department of Defense participants in the atmospheric nuclear weapons testing program and to determine the extent of radiation to which these individuals may have been exposed. This research has established that most exposures to Department of Defense personnel during the tests were quite low—averaging about half a rem. (A rem is a unit of radiation dose equivalent and reflects the radiation energy deposited within the body tissue and its capability of causing an effect.) Based upon research to date it appears that only a small number (less than one percent) received doses above today's allowable Federal guidelines.

The health effects of exposure to low levels of ionizing radiation have been considered by numerous national and international authorities. All agree that the increased risk associated with exposure to radiation at the levels experienced by the selected veterans is quite low—about 21 percent for each rem of

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low level exposure. Applying established risk estimates to the known radiation environment during the atmospheric testing period, we could anticipate approximately 13 excess cancer fatalities among the 250,000 Department of Defense participants as a result of radiation exposure. This may be compared to the estimated 40,000 cancer fatalities in the same population which would not be associated with radiation exposure. In the face of these facts, we believe that there is no sound medical or scientific basis for according to these selected veterans needed benefits above those already available to them as veterans.

The extension of medical care to the selected veterans was characterized on the Senate floor as involving no additional cost because existing Veterans' Administration facilities could be used. However, it should be pointed out that this provision would extend medical care to an additional population of approximately 350,000 atmospheric test participants who would be replacing other veterans eligible for care.

We are more concerned, however, with the perceptions among both veterans and the general public which would result from enactment of H.R. 3493 as passed by the Senate. Section 3 of the Senate passed bill creates the unmistakable impression that exposure to low-level ionizing radiation is a significant health hazard when available scientific and medical evidence simply does not support that conclusion. This mistaken impression has the potential to be seriously damaging to every aspect of the Department of Defense's nuclear weapons nuclear power programs. The legislation could adversely affect our relations with our European allies, impact upon the civilian nuclear power industry, and raise questions regarding the use of radioactive substances in medical diagnosis and treatment.

For the reasons stated above, the provisions section 3 of H.R. 3493 concerning radiation exposure as passed by the Senate, should be deleted from the bill.

The Office of Management and Budget advises that, from the standpoint of the Administration's program, there is no objection to the presentation of this report for the consideration of the Committee.

Sincerely,

WILLIAM H. TAFT, IV.

MINISTER, NUMBER OF HOSPITAL AND NURSING HOME BEDS IN MEDICAL FACILITIES OF THE VETERANS' ADMINISTRATION

Mr. CRANSTON. Mr. President, one provision of the compromise agreement would prescribe a minimum total number of hospital and nursing home beds in the VA medical centers and nursing home units. This provision, which is based on one included in H.R. 3493 as passed by the House on June 2, is intended to insure that the VA health-care system retains a sufficient number of beds to continue to operate as an integrated, nationwide health-care system. It is particularly important that the VA system continue in this fashion over the next few decades as the over 12 million surviving veterans of World War II reach an average age of 69 and beyond and have increasing need for both acute and extended health care.

Mr. President, the House-passed provision was adopted to halt the erosion in the total number of beds in the VA system that has seen a decrease of some 20,000 beds over the last 18 years. Some of this reduction in total beds has been justified as the VA has made changes in the agency's facilities to, for example, bring them into compliance with current safety and privacy standards and has reduced substantially the average length of a hospitalization episode.

However, there have also been arbitrary reductions, and an OMB policy memorandum previously made public in connection with the President's March 19 budget reductions—which includes the statement that "the existence of medical care capacity in many areas of the United States makes questionable the need for a separate VA medical system"—casts significant doubt on exactly what OMB intentions are for the future of the VA health-care system including, of course, the number of beds in that system.

Mr. President, when the committees were attempting to reconcile the two bills this past summer, we received information—in the form of an OMB staff paper, a copy of which I will ask to be inserted in the Record at the conclusion of my remarks on this provision—that the Office of Management and Budget opposed the House-passed provision relating to minimum bed levels for the VA because the provision called for a minimum number of hospital beds—42,500—and a minimum number of nursing home beds—9,000—and that the administration believed that this degree of specificity would be an impediment to proper planning as the VA attempted to meet changing patterns of demand for health-care services in the years ahead.

I share some of the concerns that have been expressed by many individuals both inside and outside of the VA about OMB's future plans for the VA health-care system, but a compromise seemed justified on this particular point. Thus, the provision in the compromise agreement does not contain separate minimums for hospital beds and nursing home beds. Rather, the provision requires the Administrator to "operate and maintain" a total number—90,000—of hospital and nursing home beds. This approach will provide appropriate flexibility to the Administrator to establish the mix of beds needed in the future, and the total is over 10,000 total beds less than the level OMB is projecting for fiscal year 1987—100,400 total beds—according to the staff paper I mentioned earlier.

At the same time, of course, this provision does place a floor under the total number of beds that must be maintained and operated in the system, and I believe that this should serve to reassure many of those concerned about the future viability of the VA health-care system—reassurance badly needed, I believe, in light of conflicting signals from this administration such as the memorandum I noted earlier which questioned the need for a VA health-care system.

Mr. President, the other significant aspect of this minimum bed provision that I want to mention is the reference in it to what I have long viewed as an important mission of the VA health-care system; namely, to serve as the backup to the health-care resources of the Department of Defense in time of war or national emergency. It has been very clear for a number of years that, in the event of armed conflict, the Department of Defense would be unable to cope with more than a small percentage of the anticipated casualties.

In my view, the first-line backup to

DOD in such a situation should be the VA health-care system, and I was very pleased that the Veterans' Affairs Committee went on record in this regard when the committee reported S. 244, the proposed Veterans' Administration and Department of Defense Health-Care Resources Sharing Act on September 28, with a substantive amendment that I authored with Senator SIMMONS. That reported bill, which should be before the Senate shortly, and a similar measure reported by the House Committee on Veterans' Affairs, H.R. 3502, on May 12, 1981, which is presently pending in the House Armed Services Committee, both address in detail the appropriate relationship between the VA and DOD in the event of armed conflict.

In anticipation of the enactment of this legislation, the provision in the compromise agreement requires the Administrator, in addition to operating and maintaining a total of 90,000 hospital and nursing home beds, to "maintain a contingency capacity to assist the Department of Defense in time of war or national emergency to care for the casualties of such war or national emergency" and to "maintain the availability of such additional beds and facilities" above that minimum level as are needed to meet the VA's contingency role.

Mr. President, I ask that the OMB staff paper I referred to earlier, which is entitled "Policy Basis for Objecting to Minimum Bed Provision of H.R. 3493," be inserted in the Record at this point. The paper follows:

POLICY BASIS FOR OBJECTING TO MINIMUM BED PROVISION OF H.R. 3493

In June 1978, President Carter was briefed by VA's Chief Medical Director (Dr. Jack Chase) on changing patterns of demand for VA medical care and options for coping with it. The VA's administration (through 1981), and the President's selection, was to continue to provide care to veterans under current authorities with emphasis on increasing ambulatory care, increasing extended and nursing home care, and reducing acute care beds. The number of veterans treated would increase despite the bed reduction because of shorter lengths of stay and emphasis on ambulatory care, both allowing much more efficient use of medical care resources. The Reagan Administration continued this policy in FY 1982 and will be reviewing it in detail in the 1983 budget process.

The following table identifies the bed levels, consistent with the recommendation and guidance given:

AVERAGE OPERATING BEDS			
	AC 1979	1982 + 1983	1987
Total VA facilities	179,500	99,756	90,000
Hospital beds	87,474	81,563	74,500
Nursing home beds	112,026	18,193	(84,500)
Private care beds	80,026	0	(10,000)
Private care beds	2,000	0	12,000
VA medical center beds	8,000	8,000	7,000

From May 1978 to June 1981, the VA's medical center beds were 97,300, with 78,700 in private care.

H.R. 3493 prescribes an 100,000 statutory minimum number of hospital beds and the President's budget 99,800 for something less than that figure. In FY 1982, this provision would require maintenance of a minimum of 37,000 new beds by FY 1987 (62,500 VA, 75,500



GENERAL COUNSEL OF THE DEPARTMENT OF DEFENSE

WASHINGTON, D.C. 20301

September 4, 1981

Honorable G.V. (Sonny) Montgomery
 Chairman, Committee on Veterans' Affairs
 House of Representatives
 Washington, D.C. 20515

Dear Mr. Chairman:

The purpose of this letter is to provide the views of the Department of Defense on one aspect of H.R. 3499, 97th Congress, a bill "To amend title 38, United States Code, to extend the Vietnam-era veterans' readjustment counseling program, to provide medical care for Vietnam veterans exposed to herbicide defoliants (including Agent Orange), to recover the cost of certain health care provided by the Veterans' Administration, and for other purposes."

H.R. 3499 was passed by the House on June 2, 1981. As passed by the House, the bill did not include any reference to radiation. The Senate bill on this subject, S. 921, as reported out of committee, was similarly silent on this point. However, on passage of the legislation by the Senate (H.R. 3499, amended), provisions in section 3 relating to medical care for veterans who participated in the atmospheric nuclear weapons testing program hereinafter referred to as "selected veterans," were added as a result of a Senate floor amendment. Thus, this amendment has not had the benefit of hearings or the comments of interested agencies.

The Department of Defense has consistently attempted to assure that legislation relating to Department of Defense programs and personnel is fair and reasonable to both veterans and taxpayers. H.R. 3499, in its present form, is not.

Through programs administered by the Veterans' Administration, Congress has established a comprehensive, no fault system of disability compensation for veterans who suffer service connected disabilities. Medical care and treatment in Veterans' Administration facilities are provided as part of that compensation. Veterans who are unable to pay for necessary health care may, even though they suffer no service connected disability, also be eligible for medical care and treatment in Veterans' Administration facilities. We have every reason to believe that the Veterans' Administration administers both of these programs in a fair and even handed manner and that all veterans have an equal opportunity to establish their rights to benefits.

Legislation such as H.R. 3499 which singles out a group of selected veterans for special benefits above and beyond that available to all veterans should only be adopted when there is a credible medical or scientific basis for affording such treatment. In the case of the provisions of H.R. 3499 concerned with radiation exposure there is no such basis.

Since December 1977 the Department of Defense, acting through the Defense Nuclear Agency, has been engaged in an extensive research program designed, in part, to identify the Department of Defense participants in the atmospheric nuclear testing program and to determine the extent of radiation to which these individuals may have been exposed. This research has established that most exposures to Department of Defense personnel during the tests were quite low -- averaging about half a rem. (A rem is a unit of radiation dose equivalent and reflects the radiation energy deposited within the body tissue and its capability of causing an effect.) Based upon research to date it appears that only a small number (less than one percent) received doses above today's allowable Federal guidelines.

The health effects of exposure to low levels of ionizing radiation have been considered by numerous national and international authorities. All agree that the increased risk associated with exposure to radiation at the levels experienced by the selected veterans is quite low -- about .01 percent for each rem of low level exposure. Applying established risk estimates to the known radiation environment during the atmospheric testing period, we would anticipate approximately 12 excess cancer fatalities among the 250,000 Department of Defense participants as a result of radiation exposure. This may be compared to the estimated 40,000 cancer fatalities in the same population which would not be associated with radiation exposure. In the face of these facts, we believe that there is no sound medical or scientific basis for according to these selected veterans needed benefits above those already available to them as veterans.

The extension of medical care to the selected veterans was characterized on the Senate floor as involving no additional cost because existing Veterans' Administration facilities could be used. However, it should be pointed out that this provision would extend medical care to an additional population of approximately 250,000 atmospheric test participants who would be replacing other veterans eligible for care.

We are more concerned, however, with the perceptions among both veterans and the general public which would result from enactment of H.R. 3499 as passed by the Senate. Section 3 of the Senate passed bill creates the unmistakable impression that exposure to low-level ionizing radiation is a significant health hazard when available scientific and medical evidence simply does not support that contention. This mistaken impression has the potential to be seriously

damaging to every aspect of the Department of Defense's nuclear weapons and nuclear propulsion programs. The legislation could adversely affect our relations with our European allies, impact upon the civilian nuclear power industry, and raise questions regarding the use of radioactive substances in medical diagnosis and treatment.

For the reasons stated above, the provisions section 3 of H.R. 3499 concerned with radiation exposure as passed by the Senate should be deleted from the bill.

The Office of Management and Budget advises that, from the standpoint of the Administration's program, there is no objection to the presentation of this report for the consideration of the Committee.

Sincerely,



William H. Taft, IV

STATEMENT OF MR. JACK LEAVITT

REPRESENTING THE NATIONAL ASSOCIATION OF ATOMIC VETERANS

Mr. Chairman, Senator DeConcini, Honorable members of this Committee, thank you for the invitation to present this testimony on behalf of those veterans who, while in the service, were exposed to radiation from atomic and nuclear weapons detonations and who now suffer because of that exposure.

The National Association of Atomic Veterans (NAAV) is a nation-wide membership organization comprised of those veterans who participated in atmospheric nuclear weapons tests between 1945 and 1962 and U.S. occupation forces of Hiroshima and Nagasaki following W.W.II. Many of these veterans now suffer from cancer and other radiation-related illnesses. Their claims for service connected disability and, consequently, access to adequate health care, are constantly denied. NAAV is the sole organization representing these veterans. Besides an extensive outreach program to find and warn these veterans of the potential health risks involved because of their exposure, NAAV actively promotes research and treatment of the medical problems of "Atomic Veterans", and is working with physicians and radiation experts to establish clinics, begin medical evaluations and conduct research on diseases caused by radiation exposure. A more complete description of NAAV and an overview of the Atomic Veteran is enclosed herewith at attachment "A".

Our members are both frustrated and angered by the treatment - or worse, lack of treatment - they receive from the V.A. They not only see the system as totally inadequate and incapable of dealing competently with the medical problems of atomic veterans, the vast majority of NAAV members view the V.A. as totally unwilling to fairly deal with those problems. The inevitable conclusion many have drawn from years and years of neglect, misdiagnosis, poor treatment, denial and callous stonewalling by the V.A. is that a government approved suppression of the facts has been passed from administration to administration. The Department of Defense, which ordered the men to be exposed, and the V.A., which is supposed to provide treatment, are using their influence to avoid the expense of medical aid and compensation to victims of nuclear weapons radiation exposure. The critical task of locating and warning atomic veterans of the health consequences of their radiation exposure has not been undertaken by these federal agencies.

In fact, they have opposed at every turn NAAV's own efforts to locate and warn these individuals.

On behalf of their country, Atomic Veterans were present at Trinity, the first atomic bomb test. They were at Hiroshima, Nagasaki. They were at the Nevada and the Pacific nuclear testing sites. Atomic Veterans patriotically ushered in the Atomic Age. They, and their genetically affected children, are now being sacrificed on the Altar of the Atomic Age. We are here today pleading that you, as members of this country's highest legislative body, remove us from that Altar before one more Atomic Veteran, one more father, one more child, one more friend, is lost. We are here today seeking justice.

I. Atomic Veterans are unable to obtain V.A. Health Care as Service-Connected Patients.

For the Atomic Veteran there might just as well not be a Veterans Administration, for his ability to obtain V.A. health care as a service-connected veteran is practically ZERO. As of October, 1981, 1720 claims were filed by veterans claiming an illness related to radiation exposure while a participant of a nuclear weapons test or as part of the Hiroshima and Nagasaki occupation forces. Only 14 of these claims were allowed as being radiation-related. (See Attachment "B") 14 awards is less than one percent (1%) of all claims filed by Atomic Veterans.

Even more shocking is the number of V.A. claimants who are now dead because of illnesses they not only believed, but often times could document, to be radiation and service-connected. NAAV has been able to ascertain, through review of V.A. records and NAAV membership records, that at a minimum, twenty percent (20%) of those who have filed claims for radiation-related service-connected disability were dead at the time of filing or have died since! In the case of the Atomic Veteran, the Veterans Administration has made a mockery of its credo: "To care for him who shall have borne the battle, and for his widow, and his orphan."

Mr. John P. Murphy, General Counsel to the Veterans Administration, has stated the V.A.'s position clearly (excerpt from Attachment "C" enclosed):

"The limitations of V.A.'s legal authority are clear: we can compensate for only those disabilities resulting from personal injury suffered, or disease contracted, in line of duty...We have no legal authority to pay appropriated funds for disabilities veterans sincerely believe to be 'service connected' if the scientific and medical data do not support such connection. We have liberally interpreted this authority to mean that an illness (such as cancer) which first appears long after service can nonetheless be considered service connected if its genesis is cellular damage sustained during service...several such disability claims by 'atomic veterans' have been allowed by V.A."

Yes! Fourteen! One of those claims was by NAAV's founder, Mr. Orville Kelly. Kelly was a participant of twenty-two atmospheric nuclear tests. At the age of 41 he contracted lymphocytic lymphoma - a cancer. For the next seven years he fought appeal after appeal with the V.A., in a claim well documented by scientific and medical evidence of the relationship between his cancer and radiation, and well supported by testimony from eminent scientists, health physicist and doctors. For seven years his claim was denied. It was only awarded after Kelly was able to bring substantial public light and political support to his plight!

The V.A.'s General Counsel acknowledges that every reasonable doubt is to be decided in the Atomic Veteran's favor. This simply does not happen, even when the veteran's claim is supported by scientific and medical evidence. Take the case of Atomic Veteran John Smitherman: For years Smitherman has been waging a battle with the V.A. for disability benefits and health care. He suffers from a non-malignant degeneration of the lymphatic system, a condition that first became noticeable (and was recorded in his records) while he was in the service and at the test site. Although his claim, that his condition is radiation-related, is supported by such luminaries in the scientific and health communities as Dr. Karl Morgan, Dr. Ernest Sternglass, Dr. Thomas Mancuso and others, his claim has to date been denied. In the meantime, Atomic Veteran Smitherman has lost two legs, and is about to lose an arm, because of his condition. Supposedly, he can be treated in the V.A. Hospital system - at Walter Reed or Fitzsimmons - but he is told he can only be referred to these hospitals if his problem is determined by the V.A. to be service-connected.*

Orville Kelly died six months after receiving his V.A. determination of service-connected disability. John Smitherman may well die before that day ever arrives for him. Unfortunately, such has been the case for far too many Atomic Veterans.

* Enactment of PL 97-72 has had absolutely no effect in changing the Nashville VA's attitude toward Smitherman's case. On Dec. 30, 1981, Smitherman was told by his attending VA physician (after a six hour wait in the VA lobby) that PL 97-72 made no difference, as far as they were concerned, and that he would not be treated by the VA unless he had been awarded service-connected disability benefits. See discussion, *infra* p7.

II. The V.A. refuses to aggressively pursue any program to locate, warn and treat exposed Atomic Veterans.

The V.A. states emphatically that they are "doing everything possible to reach veterans who are suffering the ill effects from exposure to radiation." (See V.A. letter to Senator Hayakawa, Attachment "D") The V.A. and the Defense Nuclear Agency (DNA) work together closely on the "Atomic Veteran" issue. In the correspondence to Senator Hayakawa, the V.A. notes that the D.N.A. is to conduct an epidemiological study of Hiroshima and Nagasaki occupation force veterans.

A decision was made August 21, 1981 not to conduct that study. The DNA concluded that such a study would be "impractical", mortality studies would have an inordinate cost in relation to the potential benefit, and even if such a study were conducted and it found an excess number of cases of multiple myeloma in the veterans, "it is unlikely to be attributable to ionizing radiation." (Report of Panel on Feasibility and Desirability of Performing Epidemiological Studies on U.S. Veterans of Hiroshima and Nagasaki, 21 August 1981, National Research Council, under contract No. DNA 001-80-M-0353 with the Defense Nuclear Agency.)

This decision not to do "everything possible to reach veterans who are suffering the ill effects from exposure to radiation" occurred despite the fact that a NAAV study of 265 Hiroshima and Nagasaki veterans discovered 14 cases of multiple myeloma. What is significant about 14 such cases?

Multiple myeloma is a rare form of cancer, the risk of which is recognized as increasing with exposure to radiation. In the Defense Nuclear Agency "Fact Sheet" dated 6 August 1980, the DNA states:

"Multiple myeloma...is a fairly rare form of cancer which strikes late in life. Medical science believes multiple myeloma has a border-line relationship with exposure to ionizing radiation. That is, there are some indications that exposure to radiation may increase the risk of this disease..."

Again, what is the significance of 14 cases? The National Cancer Institute's statistics indicate that in a population of 10,000 men of the age and characteristics of Hiroshima/Nagasaki veterans, you would expect to find 7.7 deaths from multiple myeloma.

The significance? We have informed the V.A. of twice that number in a population group 1/40th the population size in which you could expect 7.7 cases, and the V.A. and D.N.A. refuse to proceed to study the problem - for they say "there is no problem"!

The fact is that not one Hiroshima or Nagasaki veteran has had his claim for disability benefits awarded to date. (Attachment "B")

The fact is that the V.A. and DNA are doing nothing to help, and everything to hinder, insuring health care to atomic veterans. Approximately 50,000 atomic veterans have called a toll-free number established by the DNA. If NAAV's membership is representative of those 50,000 individuals, then not more than 25% have been urged to get a physical following their initial contact with the DNA. The rest have received meaningless follow up or none at all from our government. This, then, is what the V.A. calls "everything possible to reach veterans who are suffering ill effects from radiation exposure."

III. Atomic Veterans are unable to obtain VA Health Care as Non-service connected patients.

The ability of atomic veterans with non-service connected disabilities to receive adequate health care from the V.A. is no better than his chances of getting a V.A. disability award - notwithstanding the recent passage of PL 97-72, the Veterans' Health Care, Training and Small Business Loan Act of 1981. A provision of that Act grants the V.A. authority to provide health care for disabilities that may be related to radiation exposure during military service. However, the V.A. adopted guidelines to implement this provision which, among other things, state:

"...each veteran who participated in the testing... will be provided a complete medical examination...Where the findings reveal a condition requiring treatment, the responsible staff physician shall make a determination as to whether that condition resulted from a cause other than the veteran's exposure to radiation. Conditions other than cancer are usually considered to be due to causes other than exposure to ionizing radiation." (emphasis added).

Thus, the VA has codified its previous policy, - utilized in assessing disability claims (See Attachment "C", correspondence of VA General Counsel) - that only cancer in certain forms, and nothing else, will be considered as radiation-related. This is done despite the fact that Congress, in enactment of PL 97-72, intended VA health care to be extended to all veterans conditions that may be related to radiation. This is done despite the fact that there is sufficient evidence to at least suspect several other disabilities as being radiation-related. (See Attachment "E")

The Chief Benefit Director of the V.A. would have you believe:

"The VA makes available the hospital and medical treatment program to all veterans discharged from service.

"A veteran need not be service connected for the condition which he or she seeks hospital treatment, be it radiation induced or otherwise. Hospitalization is afforded each veteran for non-service connected disabilities as well as service connected disabilities..."

(See Attachment "D")

The fact is, this plainly and simply does not happen. John Smitherman is only one of hundreds, if not thousands, of Atomic Veterans who is denied adequate health care by the V.A. The V.A. guidelines to implement PL 97-72, quoted previously, are codification of the fact that the VA will not treat all radiation related injuries.

Because the VA refuses to conduct the necessary medical surveys to truly assess the health consequences of radiation exposure, NAAV has undertaken such a study. Of the first 300 responses to its initial health questionnaire, NAAV's members report a shockingly high, disproportionate and broad range of health problems at a relative young age (men 40 to 55 years old):

All forms of cancer; sterility; skin diseases; bone and muscle deterioration; eye disorders; tumors; lung and heart problems; internal disorders; blood in urine; numbness in extremities; and chronic headaches.

(See Attachment "F")

The limited evidence that does exist legitimates the Atomic Veterans' claims that health care should be provided beyond merely cancer. Rather than allowing the VA to stifle much needed studies, it is a sincere hope of NAAV that this Committee will mandate the VA to pick up and continue the studies that we have started. Rather than allow the VA to continue to deny Atomic Veterans much needed medical treatment for all potentially radiation-related illnesses, NAAV seeks this Committee's assurance that the V.A. fulfill its new obligations under PL 97-72 and that the necessary funding to carry out those obligations not be withheld.

IV. The V.A. does not have the Medical Expertise to effectively treat Atomic Veteran health problems.

Yet, provision of adequate health care and medical treatment for what often prove to be very complex medical problems may not be solved by simply providing access to V.A. hospitals. For those of NAAV's members who have been treated in V.A. hospitals, whether as service or non-service connected patients, seventy percent (70%) in a recent NAAV poll expressed dissatisfaction with the treatment they received or are receiving.

Again, John Smitherman is a case in point. As mentioned earlier, he has already lost his legs. He is about to lose his left arm. His condition is such that he suffers a mammoth swelling of his left arm and hand (as he did in his legs prior to amputation). His hand presently is the size of a small football. Yet the VA's monthly "treatment" is to take a picture of his hand and give him pain medication. This is not treatment. This is not even an effort to properly diagnose. This is a health system quietly watching and recording the slow and agonizing death of a man who patriotically served his country. Unfortunately, Smitherman's case is only one example of the many frustrated and angry reports from our members of the inability or unwillingness of the VA to provide adequate health care.

In the NAAV poll, it was asked whether our members would support legislation which would allow a veteran who could not get adequate health care from the VA the option of attending private medical facilities, with the government reimbursing the costs of so doing. Ninety percent (90%) of our members indicated that they would support such legislation.

NAAV asks that this Committee support such a proposal as well. We believe that you will find that in an era of an ever-tightening budget, this would prove a practical and valuable means of reducing the cost of caring for America's veterans while yet insuring quality health care. It may be the only way that many men with the complex health problems caused by such toxins as radiation and agent orange will ever obtain adequate treatment. It does not propose doing away with the V.A. system, but simply opening the doors of the free-market. It will force the V.A. to upgrade the quality of its health care as it is forced to compete with private hospitals. The public will benefit. All veterans will benefit.

V. Genetic defects in Atomic Veteran offsprings.

The real tragedy is that there is no compensation or health care available to children of atomic veterans who have been affected. Over 40% of NAAV members responding to our medical questionnaire report having children with severe genetic defects. Genetic defects are showing up in children born after certain veterans' participation in nuclear tests, where children of those same veterans born prior to participation are healthy and normal. Moreover, there appears to be little or no history of genetic problems in these families. A majority of the problems these children are born with are recognized by doctors and scientists alike as being radiation related. (Attachment "G")

The genetically affected child, however, has no recourse for help. The child cannot sue in federal court. Recently the Ninth Circuit ruled that the child of an atomic veteran was prohibited from suing the government because of the Feres doctrine. Monaco vs. USA, 661 F2d 129 (Nov, 1981). Certainly the child is not covered under the VA health care system. This was recognized in the conclusion to the Monaco decision when Judge Nelson, speaking for the Ninth Circuit Appellate Court, stated:

"The result in this case disturbs us, particularly with respect to Denise. In her case, the price of avoiding examination of events long past, and involving her behavior in no respect, appears to be complete denial of recovery."

Judge Nelson made it clear that the only hope of relief for these

genetically affected children rests in the hands of the U.S. Congress. He took the unprecedented step of suggesting in his opinion that Congress come to the aid of children such as Denise:

"We have held in this case that the doctrine of sovereign immunity prevents Denise from recovering for her injury in the federal courts, but we encourage Denise to pursue any legislative remedies available to her. That she will be able to recover through such channels, is unclear, but not without hope.... Perhaps if Congress is made aware of the seriousness of claims such as Denise's it will be moved to grant relief to the individuals who request it, or to change the FTCA to allow such recoveries in the federal courts. We sincerely hope Congress will do at least the former."

NAAV seeks this Committee's support in locating and studying the health problems of children of Atomic Veterans. If such studies prove what we sadly believe to be true, we ask for your support for legislation insuring that these unfortunate children receive adequate care and medical attention.

VI. CONCLUSION

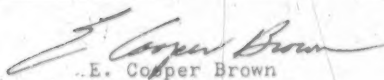
For the Atomic Veteran and his affected offspring, the V.A. health care system is totally inadequate. He has no access to the health care the V.A. provides, and what few do have access come back with horror story after horror story of poor to grossly negligent care.

Needed is a system that guarantees the veteran adequate care. Needed is a system that guarantees the veteran the option of going elsewhere when the treatment he receives in a V.A. hospital proves inadequate. Needed is provision for the next generation of "Atomic Children."

Do not let the calmness and logic of this presentation fool anyone. An overwhelming majority of our members are frustrated. They are angry. They feel that they were used as Guinea Pigs and then, having been used, suffered the worst abuse of all -- they were forgotten.

Thank you for this opportunity to share with you
these concerns.

Jack Leavitt
Arizona State Representative
NAAV


E. Cooper Brown
General Counsel
NAAV

The CHAIRMAN. During the March 12 hearing on this legislation, Mr. Jack Thompson, of the Veterans' Administration, testified that the VA has provided service-connected disability payments to 16 atomic veterans and their dependents. On Tuesday, my office received summaries of 12 of these cases. Apparently four cases involve veterans who actually developed cancer in the service. These 12 cases entail the entire nuclear testing program, including not only the Nevada tests but also the Pacific tests and the early 1945 and 1946 tests in New Mexico.

In light of these documents, several questions come immediately to mind. I wonder if you will try to answer each of these in turn.

In almost every one of these cases, the VA finally determined that the individual's veteran radiation dose could not be determined, even though most of them had officially registered doses that were very small. In other words, the officially registered dose was small but they then admitted that they could not determine the full dose.

For example, one veteran had an official dose of 1.87 rems and another had an official dose of 80 millirem. Do you think it possible that other atomic veterans may have received higher doses than were officially registered?

Mrs. BROUDY. I personally do not believe any of those official doses.

The CHAIRMAN. That the Government is using, you are saying—the doses that the Government is using in their figures?

Mrs. BROUDY. That is right; I don't.

I think that what they are saying and what they are using are these very low dosages which may have been recorded on film badges. My husband's film badge recorded a very low reading. He died, however, 20 years after his exposure of lymphoma.

The Defense Nuclear Agency continues to use these small dosages. They base the decisions of their claims, their denials, on these small dosages. This is what they are hanging their hats on. This is what they have done in my husband's case. As I said, I have been denied six times. This is one of the reasons.

Another reason is that he happened to be 57 years old when he died. They thought that was a good age for him to get lymphoma, anyway.

The CHAIRMAN. I am going to submit the other questions to you.

However, let me just say this: Having reviewed these 12 cases, I am interested in seeing examples of cases which have been denied.

Do you think your organization can provide me with summaries of these cases?

Mrs. BROUDY. I certainly do.

[The material to be supplied follows:]

ALICE P. BROUDY
 33492 Periwinkle Drive
 LAGUNA NIGUEL, CA 92677

(714) 061-0172

April 3, 1981

Mr. James W. Powell, editor
 Senate Committee on Labor and Human Resources
 4230 Dirksen Building
 Washington, D.C. 20510

Dear Mr. Powell:

Enclosed is the transcript, together with a copy of my last denial by the Veterans Administration, a copy of Orville Kelly's VA favorable decision, and various letters.

I am using my VA case as a typical example and will point out to you the many errors and omissions and glaring examples of coverup.

In my last denial, under THE EVIDENCE, page 2, it is stated, "These records contain no complaints or findings suggestive of lymphoma." That is because from the time of my husband's first exposure in 1948 through his retirement in 1961, the medical records had been removed from his military medical file which would have proven this. There were no blood or urine tests, which would have proven the presence of Cesium and Strontium and Plutonium, and no comprehensive physicals, and in spite of the fact that my husband had had several surgeries during that period of time, the pathology reports had been removed. My husband was a pilot and all pilots must have comprehensive physicals at least once a year. These were also missing.

I had furnished to the VA in Los Angeles the biopsy materials and blood and urine and bone marrow biopsies from both St. Joseph Hospital and the Hematology-Oncology Clinic. These specimens were from his biopsy diagnosis in 1976 of lymphoma. One of the packages (from Hematology-Oncology) was "lost in the mail room" of the VA office in Los Angeles.

Page 3 -- first paragraph. Note the difference in the white blood cell counts between 1948 and 1961. This is indicative of radiation exposure. I enclose a letter from Dr. Rosalie Bertell dated 1-18-80 which I used in my last appeal to the VA.

Paragraph 3, page 3 re the badge reading. I did get a copy of the film badge reading and it was 13 mr. However, he was involved in three tests during that time and a new badge was to be issued at each test. There was also a form detailing the radiation exposure which was to be included in his medical record. Of course that is missing also (see EXERCISE DESERT ROCK VII AND VIII, FINAL REPORT OF OPERATIONS dated 11-25-57). In addition, according to that document, those badges were ineffective in recording neutron and alpha and beta radiation. They had a defective alligator clip and fell off easily. My husband told me he was not wearing a badge during HOOD, 74 kt.

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Paragraph 5, page 3 -- the fact that the retired officer referred to wore a film badge at all times may be true, but that doesn't mean that my husband did, and in addition, that particular officer, told me to was also carrying a dosimeter, which my husband did not. The method of decontamination during those tests was by "sweeping with brooms," thereby raising more dust to be inhaled, which of course was laden with Plutonium and Strontium and Cesium, et cetera.

Last paragraph, page 3. Latency period of 20 years is common with lymphoma. When a person is exposed at 37 and you add 20 years you come up with 57 (diagnosed at 56). That is the age at which my husband died. The VA contends that most lymphomas occur at that age anyway, so because of that fact this claim was denied.

Page 6, please see Dr. Frank von Hippel's letter dated August 17, 1978. Dr. von Hippel is a professor of Environmental Studies at Princeton University. Dr. von Hippel's statements are from documents provided by me to him, which are government, declassified documents. You will note that Dr. von Hippel estimates a dosage for my husband of 60 rads plus 10 rads residual, making a total of 70 rads. And then read the next letter from Dr. von Hippel, pages 8 and 9.

Page 9 re the complete clinical records, et cetera. They neglect to say that the physical specimens from the Hematology-Oncology Medical Group were lost in the mail room of the VA.

In the last paragraph of page 9: "2. On the basis of the records submitted, it is reiterated that insufficient scientific data are given to establish a cause-and-effect relationship between the lymphomatous disease of either of these veterans and his participation in nuclear device testings.

Please read page 10 very carefully. We are dealing with two individuals, Major Charles A. Broudy, and Orville Kelly, the founder of NAAV.

"3. Proper scientific evaluation of these veterans' claims can be made only when data, specific for these individuals, are supplied in categories such as: and then there are six categories requested. Of course these categories were not provided to Johns Hopkins by me since I cannot obtain such data, and they were not provided by the VA of the DNA. Consequently, Johns Hopkins could not give a valid opinion as to the proper scientific evaluation.

Page 11, first paragraph concedes that both Broudy's and Kelly's recorded exposures "are both well below the NRC allowable annual occupational exposure level of 5.000 REM."

Paragraphs 5, 6 and 7 on pages 11 and 12 give the reasons for my husband's denial. I am enclosing several letters received recently regarding the age factor and the latency period. My husband was 56 when his lymphoma was discovered and it was Stage IVB, which is terminal. It does not

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develop overnight and I have varying opinions as to how long it was in his body before discovery. It is a difficult cancer to diagnose.

Page 14, first paragraph. I enclose a copy of the letter referred to and I had a conversation with a gentleman from Science Applications, Inc., in McLean, Virginia. Science Applications is the author of the reconstruction of Shot Hood. His name is Jerald Goetz, and we spoke on the phone on 6-9-81. He told me that it was possible that my husband could have received anywhere from 1.25 REM to 2.50 REM. It is important to note that there is no time figure here. Was this the doubling dose, was this 2.50 REM per hour, day, week, minute or second? It makes a great big difference.

What amuses me is that when we first tried to obtain my husband's records from the Marine Corps we were told they didn't exist. They had no records sending my husband to Camp Desert Rock from June 10 to July 5, 1957. And now we are getting a play-by-play description of his every move from Science Applications. I was told that he "moseyed around the display area" (400 yards from g.z.) for approximately two hours, and many other details. If it wasn't so tragic it would be funny. Mr. Goetz gave me the names of several documents he used to compile this information. I have written to the DNA and they said to write to National Technical Information services. They haven't even replied to my letter. Actually, for both Priscilla and Hood, the men were in trenches, and shortly after the detonation they moved towards ground zero. The bomb (in the case of Hood) went off at 4:40 A.M. and the maneuvers secured around 2:30 P.M. The men were in very contaminated areas for anywhere from six to eight hours. The wind was blowing terribly, and the men were inhaling this dust laden with alpha emitters. They ate C-rations in the field, thereby ingesting the same garbage. The C-rations are coated with wax, and the dust clings to the covers of the C-rations. All of this is documented. There are documents on all this information, and I've got them.

The last paragraph on page 14 indicates that the matter had been submitted to an Independent Medical Examiner, which I understand is Sloan Kettering. My understanding of an independent medical examiner is one chosen by me. I was not consulted in this matter. The last sentence in the paragraph above the quoted area "The only portion of the opinion deleted is a history of the course of the veteran's illness." It is strange that the basis of their denials has been my husband's age and the onset of the lymphoma. If we had the information regarding the history of the course of the veteran's illness, that might tell us when the onset of the disease commenced which is the crux of the whole matter. I feel I am entitled to a copy of this report. Would it be possible for you to get it for me?

Page 11, second paragraph, about two-thirds of the way down. "We note that the appellant did not gain information from the veteran as to his duties or maneuvers during the tests." It is a trifle difficult getting this information from a dead man. All of my information I have obtained

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from documents obtained over the past five years from the government, from the National Technical Information Services, from Medlars, and from several trips to Japan and discussing the matter with the Source, meaning the doctors treating the Japanese who were contaminated from radiation from our bombings. The following sentences go into the matter of Science Applications reconstructions. That reconstruction according to Mr. Goetz, did not take into consideration, tests Priscilla and Diablo, so when he spoke with me about it, he stated that if my husband had attended all three tests that he probably had a total dosage of 2.50 rads.

First paragraph, page 19. It is stated that my assertions are speculative in nature and, "in view of the state of the record, can only be rebutted by speculation on our part. Speculation will not support a decision; we are constrained to reach a decision based on reasonable probability, as opposed to speculation." That says it all. None of the material I have furnished the VA is speculative. It is all based on fact and documented thoroughly. The government admits that they are speculating and have based their decision accordingly.

Page 19, third paragraph. Since the government is speculating let's go into this a little further. "According to the independent medical expert opinion, it is unlikely that the veteran's lymphoma resulted from radiation exposure, unless his exposure was in the area of 100 rads or more." Please reread Dr. von Hippel's letters. This is not speculation, but based on solid facts.

It is my personal opinion that the reason I have been denied so many times is that I have filed a lawsuit against the government, and I might add, that this is probably the fate of anyone else who dares file a lawsuit.

At this point I would like to answer some of the questions posed in our testimony of April 8th. You indicated you would submit in writing some questions which I have not received.

The Chairman indicated he would be interested in knowing what distinguishes the successful claims from the unsuccessful claims.

From what I know, I can use my husband's case (the unsuccessful one) in contrast with Orville Kelly's case (the successful one). As you have noted in my husband's VA denial, these two cases ran through the channels concurrently and it was stated that neither of them had enough radiation to meet the standards required. However, Orville Kelly's claim was granted, and Broudy's was not. I am enclosing a copy of Mr. Kelly's final decision which was favorable. Mr. Kelly was the founder of Make Today Count, an international organization for cancer victims and also the founder of the National Association of Atomic Veterans. He was a former radio announcer and editor of a small-town newspaper. He was a renowned speaker and lecturer. He was also a deserter from the Army and was incarcerated in a civilian jail for six months. He was a drunk and got a dishonorable discharge from the Army. In spite of this, after 14 years he was able to clear his name and have the dishonorable discharge upgraded to a general discharge and was therefore entitled to VA benefits. (See TIME BOMB published by Wm Morrow & Co., Inc., 1981)

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Contrast that to Major Broudy. He enlisted as a private in 1940. He rose to the rank of sergeant rapidly and requested flight training. During the war he flew as a temporary second lieutenant. After the war he took a college equivalency test and passed with flying colors thence becoming a permanent officer. He earned five air medals during combat in Korea and a Distinguished Flying Cross. During WWII he flew in the Pacific and distinguished himself during his entire 20 years in the Marine Corps. He retired with an Honorable Discharge in 1961. When he died we didn't even get a flag from the government.

You ask why some of the veterans got their VA benefits and some did not. Political pressure. When Orville Kelly died, Senator Cranston's aide personally attended his funeral, as well as a former aide. His funeral was with full military honors. What a charade. This, after his miserable military record.

In the case of Donald Coe, because of the publicity and Congressman Carter's and Roger's hearings of 1978 (Coe was a constituent of Carter's), his case was decided in his favor. He has hairy cell leukemia, not really a radiation-induced cancer.

In the case of Paul Cooper. He is the one who initially blew the whistle on the government in the radiation experimentation, and because of the hue and cry of the media, and also the Carter-Rogers hearings his case was decided in his favor, although his symptoms were evident before his discharge.

Lyda Ragusa, a widow, obtained benefits for her husband's death. She was unable to prove his attendance at any nuclear test and did not have a badge reading for him. She worked through her congressman and the DAV.

These are the only ones that I am personally familiar with.

A very interesting aside. Lymphoma is extremely rare. Glyn Caldwell's study of Smoky, a 1957 test found, in addition to 9 leukemias out of approximately 500 men, also 9 lymphomas out of the same number. Please see page 8 of Orville Kelly's decision. In the 45-49 age group there are 8.4 naturally-occurring lymphomas in a population of 100,000 per year. I am referring to the study conducted by Dr. Caldwell of the Center for Disease Control published several years ago.

If you have any other or further questions that I might be able to help you with, please let me know. You have my permission to withdraw my VA file from the VA office in Los Angeles if you wish to pursue this further (and I hope you do.)

You can't realize how happy it makes me to see, finally, a gentleman such as yourself, truly interested in the veterans. We have waited so long.

With the best of kind wishes,

Pat Broudy
Pat Broudy

IN THE APPEAL OF

ALICE P. BROUDY

IN THE CASE OF

CHARLES A. BROUDY



XC 22 660 616

BOARD OF VETERANS APPEALS

WASHINGTON, D.C. 20420

FINDINGS AND DECISION

(RECONSIDERATION)

DOCKET NO. 80-03 328

DATE JAN 25 1982

THE ISSUE

Entitlement to service connection for the cause of the veteran's death.

REPRESENTATION

Appellant represented by: Ronald G. Bakal, Attorney at Law

WITNESS AT HEARING ON APPEAL

Alice P. Broudy, appellant

CONSULTATIONS BY THE BOARD

William J. Reddy, Staff Legal Adviser

Armed Forces Institute of Pathology

An Independent Medical Expert

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ACTIONS LEADING TO PRESENT APPELLATE STATUS

This case was originally before the Board in January 1979. In order to obtain additional medical data, the Board REMANDED the case to the agency of original jurisdiction. After the additional data had been obtained, the case was returned to the Board. In December 1979, the appellant's claim for service connection for the cause of the veteran's death was denied. A copy of the decision was provided to the appellant and her representative. By letter dated February 1980, the Honorable Alan Cranston, United States Senator, requested additional development of the evidence and a reconsideration of the Board's decision. On reconsideration, the case was REMANDED to the agency of original jurisdiction so that additional development of the evidence could be undertaken. The additional development has been accomplished, and the case is now before the Board for final adjudication. An enlarged panel consisting of six members of the Board has been convened for the purpose of reconsideration.

CONTENTIONS

The appellant and her representative contend that the cause of the veteran's death, histiocytic lymphoma, resulted from exposure to ionizing radiation during service. They contend that this exposure occurred when the veteran attended a radiological school in 1948 and when he participated in nuclear testing in 1957. Their primary contentions, in essence, are that the veteran was exposed to much more radiation than the data of record indicates, and that the length between such exposure and the development of lymphoma raises a reasonable doubt which must be resolved in their favor. On reconsideration, they contend that the Board, in reaching its decision of December 1979, did not properly consider certain items of evidence. As mentioned above, additional development of the evidence was also requested, and has been accomplished.

THE EVIDENCE

The veteran served on active duty from October 1940 to October 1960. The Certificate of Death shows that the veteran expired in October 1977 as a result of histiocytic lymphoma, Stage IV. At the time of his death, service connection was not in effect for any disability.

The veteran's service medical records have been received. These records contain no complaints or findings suggestive of lymphoma. The records contain a report of a physical examination which was conducted in the summer of 1948 while the veteran was attending a radiological safety

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school. This report shows that the veteran's white blood cell count was 6,950, with 55 segmented neutrophils, 41 lymphocytes, 3 eosinophils and 1 monocyte. This examination report contains a notation that the veteran reported that his total radiological exposure, as of a certain day in August of that year, was 3 days, 3 hours and 0 minutes. "Total gamma" and "total beta" were 0. The report of the veteran's preretirement physical examination shows that the veteran's white blood cell count was 5,700, with a reportedly normal differential count.

A statement, dated July 1977, has been received from the Department of the Navy. This statement indicates that the veteran was stationed at Hunter's Point Naval Shipyard in August 1948, at which time he received a dose of 0 rem.

A copy of a letter dated June 1978 has been received from the Department of the Navy. This statement indicates that the veteran was attached to the 4th Marine Corps Provisional Atomic Exercise Brigade from April 10 to July 17, 1957, in conjunction with exercise Desert Rock VII. The statement also indicates that the subject exercise was conducted in conjunction with an atomic detonation yielding 74 kilotons at the Nevada Test Area on July 5, 1957. Included with the letter was a dosimetry report showing that the veteran had received 0 millirems beta and 13 millirems gamma radiation, according to a badge that had apparently been turned in on July 11, 1957. The letter also indicates that this dosage report represents the total gamma exposure in millirems from June 19 to July 11, 1957.

Records have been received from the Hematology-Oncology Medical Group which show that the veteran had generally been in good health until the onset of night sweats and nodes in the axilla which prompted him to undergo a physical examination in August 1976. A lymph node biopsy resulted in a diagnosis of non-Hodgkin's lymphoma.

A record of a telephone communication with a retired Marine Corps officer has been received. This record indicates that the retired officer had been assigned to Camp Desert Rock as an observer during the summer of 1957. He recalled that the veteran had been serving there, but could not recall the veteran's precise locations during the nuclear tests. This retired officer personally remembered being tested for radiation at least twice and said that he wore a film badge at all times.

A statement, dated June 1977, has been received from Glyn C. Caldwell, M.D., of the Center for Disease Control, which indicates that the veteran was likely to have participated in atomic tests in June and July 1957. The

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statement indicates that the Hood test was the largest of the devices detonated, approximately 74 kilotons. Dr. Caldwell reports that he cannot say whether or not the veteran's malignancy was caused by radiation exposure during that time. He reports that it is certainly possible, and that such exposure could produce disease with the onset delayed as much as 20 years or more.

An opinion was obtained from the Director of the Nuclear Medicine Service of the Veterans Administration. His statement, dated October 1977, contains a conclusion that, "...there is no evidence of a cause and-effect relationship between this veteran's malignant lymphoma, diagnosed in 1976, and exposure to ionizing radiation during his Marine Corps service."

A 59-page statement, dated June 1978, has been received from the appellant. In this statement, the appellant reports that the veteran was exposed to radiation in 1948 aboard highly contaminated vessels used in the Bikini tests. The appellant included arguments against the accuracy of film badges and dosimeters, and arguments for the proposition that the veteran incurred internal exposure. The statement also includes excerpts from medical and technical documents concerning the health effects of radiation exposure. Excerpts from several articles dealing with the increased incidence of lymphoma among survivors of the atomic bombings in Japan are included. One excerpt indicates that the peak of onset of lymphoma was approximately 10 years after the bombing. The article also discusses the age of the individuals at time of exposure and their age at onset of the disease. The article indicates that the individual's exposure was relative to the distance from the hypocenter. It is noted that none of these articles discuss any estimates of amount of exposure in quantitative terms. The appellant's statement also includes excerpts from articles and transcripts of congressional hearings dealing with the conduct of atomic weapons testing and the likelihood of internal exposure, especially plutonium ingestion. Also included are excerpts from articles dealing with radiological safety, monitoring, and decontamination, as well as the operation of exercise Desert Rock VII and VIII. Efforts to reconstruct exposure levels for participants in the tests are also discussed. The material indicates that Shot Hood was the was the largest blast fired in the continental United States.

Annexed to the above-mentioned statement from the appellant are the opinions of two scientists, presented in conjunction with a similar claim by a different veteran, concerning the induction of lymphoma by radiation from nuclear tests and the validity of film badge readings with respect to beta radiation. Also annexed to the appellant's

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statement is a statement made by the Director of the Defense Nuclear Agency before the United States House of Representatives in February 1978. This statement discusses the Defense Nuclear Agency's efforts to reconstruct radiation exposure levels and other data pertaining to atmospheric nuclear tests in which military troops participated.

A transcript of a hearing, conducted in October 1978, is available. During the hearing, the appellant's representative advanced the contention that the veteran was exposed to radiation on three separate occasions during service. The first occasion was as a trainee in the radiological school in 1948. They also contended that the veteran was exposed to radiation during 1957 while participating in detonation "Priscilla" and detonation "Hood." The representative stated that he felt that the medical evidence which had been submitted established a causal relationship between exposure to radiation and the development of lymphoma. He stated that it cannot be denied that the veteran was exposed to radiation, and that there was no way of knowing exactly how much exposure the veteran received. He, therefore, felt that a reasonable doubt existed, which must be resolved in favor of the claimant. The appellant testified that the veteran participated in Operation Plumbbob which she claimed consisted of a total of 69 detonations, only 24 of which were announced. Shots Hood and Priscilla were the largest of the detonations. She reported that extensive efforts on her part have failed to locate any of the veteran's medical records concerning his exposure to radiation and any blood analyses performed during subsequent physical examinations. The appellant stated that she noticed the veteran displaying symptoms of lymphoma long before a diagnosis of lymphoma was made. She also testified that, when he was questioned prior to his death concerning the details of his exposure, the veteran could not remember because of the advanced stage of his disease. The appellant reported that her research had revealed that a great amount of dust and dirt and debris was blown around during and after the tests. She reported that the personnel decontamination was accomplished by the men sweeping each other off with brooms. She stated that this caused more dust and debris to be inhaled. She also reported that her research had revealed that the participants did not wear any protective clothing. The appellant stated that she and her representative went to Japan and toured Japanese hospitals and talked with Japanese physicians and medical researchers in an attempt to obtain medical evidence of the causal relationship between exposure to radiation and the development of lymphoma. She indicated that the trip was successful.

During the above-mentioned hearing, the appellant and her representative submitted additional documents, consisting of numerous pages, in support of their contention that the veteran's lymphoma resulted from exposure

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to radiation. These documents include copies of newspaper articles concerning the activities of the veteran's unit during the nuclear testing. Also included is a portion of an article on dosimetry entitled, "Dose Estimation From Residual And Fallout Radioactivity." The documents also include medical articles dealing with the incidence of lymphoma in survivors of the Japanese atomic blast, experimental induction of lymphosarcoma in dogs by the use of plutonium, and information concerning operations Desert Rock VII and VIII.

Also submitted at the hearing was a letter, dated September 1978, from Frank von Hippel, on letterhead from the Center for Environmental Studies at Princeton University. The following is the text of the letter:

"Thank you for your letter of August 17, 1978.

"Your husband could have received a radiation dose from three sources:

"i) Direct radiation from the blast,
ii) external and internal radiation from radioactive fallout, and iii) radiation from activation products in the soil beneath the location of the blast. I will say what I can about each of these possible sources of dose below:

"i) Direct Radiation: For a blast 1,500 feet above the ground the slant distance 5,500 yards from ground zero would be about 5,520 yards. At this distance the dose from neutrons and gamma rays emitted from the blast would be very low. Extrapolating the curves on pages 333 and 346 of ref. 1 to 5,500 yards I find doses on the order of millirems and tenths of millirems for gammas and neutrons respectively in the absence of shielding. In the trenches the doses would be much lower still.

"ii) Fallout Radiation: The height of the burst was apparently above the height of approximately 1,000 feet below which a

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77-kiloton burst would be expected to produce a large amount of local fallout (ref. 1, page 72). I am unfortunately unable to estimate how large the fallout doses might have been for this burst height.

"iii) Activation Radiation: Here ref. 2 which estimated the doses from residual radioactivity at Hiroshima and Nagasaki is the most useful source that I can find. In Table I of this reference estimates are given that the external gamma dose rate 400 meters (437 yards) from the hypocenter at Hiroshima was 1.4, 1.3, 1.2 and 0.75 rads/hr at 1, 2, 4 and 12 hours after the explosion. The cumulative dose over eight hours would therefore be approximately 10 rads. Scaling up from the estimated 12.5-kiloton yield of the Hiroshima bomb to the 77-kiloton yield of "Hood" (both bombs were apparently exploded at approximately the same height of 1,500 feet) the eight-hour dose at 400 meters becomes approximately 60 rads.

"A more exact calculation would have to take into account the time your husband spent at different distances from the hypocenter, the differences in the neutron/blast yield ratios of the Hiroshima and Hood bombs, and the differences between the soils and other activated materials present at Hiroshima and at the Hood test site. It appears possible, however, on the basis of the information in your letter that your husband could have received a dose of the order of 10 rems or more from residual radiation associated with activation products.

"I hope that this information is useful to you.

"References:

"1) Department of Defense and Department of Energy, The Effects of Nuclear Weapons (1977).

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"2) K. Takeshita, 'Dose Estimation from Residual and Fallout Radioactivity,' Journal of Radiation Research, volume 16, supplement, page 24 (September 1975)."

A letter, dated November 1978, addressed to the appellant's representative from Frank von Hippel has been received. The pertinent portions of this letter are reproduced as follows:

"I've looked at the Operation Plumbob report which you left me (ref. 1 enclosed). Unfortunately it concerns only the direct neutron and gamma dose from the nuclear explosions. As I indicated in my letter of September 13 to Pat these doses would have been insignificant at a distance of 5,500 yards from the hypocenter.

"Nevertheless the Plumbob report is still useful to (sic) two reasons:

"1) It makes possible an improved estimation of the ratio between the neutron radiation from 'Hood' and the estimated radiation fields from the Hiroshima and Nagasaki bombs. Comparing the neutron dose from Hood at 1,000 meters from ground zero (17,000 rads according to Fig. 4.15* of ref. 1) with the 1965 Oak Ridge estimates of the neutron dose at the same ground distance from the Hiroshima explosion (200 rads according to Fig. 10 of ref. 2) I get a ratio of 85. This is much larger than the ratio of the explosive powers which was only a factor of 6 (77 versus 12.5 kilotons). John Auxier of Oak Ridge tells me that this is reasonable since the Hiroshima bomb was of a primitive design with a very thick iron casing which slowed and absorbed the fission neutrons.

"It appears therefore that scaling to the Hiroshima activation doses would lead to potential doses to

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Mrs. Broudy's husband 10 times larger than those I estimated in my letter of September 13, 1978, to Mrs. Broudy.

"*According to John Auxier at Oak Ridge the dose axis on this figure is mislabeled. The numbers should be read as a factor of 10 smaller.

"References:

1) Operation Phantomb: Radiation Dosimetry for Human Exposures (Oak Ridge National Laboratory, WT-1504, 1958).

2) J. A. Auxier, 'Physical Dose Estimates for A-bomb Survivors--Studies at Oak Ridge, U.S.A.' (Journal of Radiation Research Vol. 16 supplement, p. 1, 1975)."

A news release, dated July 5, 1957, from the Nevada Test Organization has been received. This news release describes fallout measurements of the test conducted on that date. Estimated lifetime dosages at various points along the path of the fallout varied from "trace" to 68 milliroentgens.

The complete clinical records of the veteran's treatment by the Hematology-Oncology Medical Group and at the St. Joseph Hospital have been received.

The entire file was submitted to the Director of the Veterans Administration Nuclear Medical Service for an opinion. The Director submitted the following reply:

"1. The VACO Director of the Nuclear Medicine Service reviewed the above files with Dr. Thomas G. Mitchell, Radiation Physicist of the Johns Hopkins University Medical Institutions. There was complete consensus on the opinions and statements given below.

"2. On the basis of the records submitted, it is reiterated that insufficient scientific data are given to establish a cause-and-effect relationship between the lymphomatous disease of either of these veterans and his participation in nuclear device testings.

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"3. Proper scientific evaluation of these veteran's claims can be made only when data, specific for these individuals, are supplied in categories such as:

"a) The readings from cohort film badges and dosimeters of a given nuclear test.

"b) Scenario details for each test.

"c) Radiation physics and biophysics analyses of each test.

"d) Soil radiation analysis following each test.

"e) Field radiation monitoring records for each test, including dust radiation analysis.

"f) Evidence of extent of neutron activation of elements in soil correlated with distances from ground zero.

"4. With respect to veteran Broudy it is noted that Dr. von Hippel's analysis, meeting the expectation of insignificant gamma and neutron activity at 5,500 meters, is consistent with the veteran's recorded film badge reading of only 13 exposure. However, Dr. V. Hippel then gratuitously and irrelevantly projects 60 rads at 440 meters.

"5. While general application of the ALARA principle (As Low As Reasonably Achievable) results in lower radiation exposures, in practice, than those considered allowable by NRC, nevertheless the NRC has not rescinded either its yearly or lifetime allowable occupational exposure levels.

"6. In his June 1979 Task Force Report to Senator Glenn's Committee, Mr. Peter Libassi, former General Counsel of HEW, commented that the Study Group found no reason to recommend deviation from the NRC annual allowable occupational exposure level of 5 REM.

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"7. Veteran Broudy's recorded exposure of 0.013 REM, and veteran Kelly's recorded exposure of 3.445 REM, are both well below the NRC allowable annual occupational exposure level of 5.000 REM."

(Veteran Broudy's claim was considered by the Director along with the claim of another veteran.)

After the Director of the Nuclear Medicine Service completed his review, the case was forwarded to the Armed Forces Institute of Pathology for their opinion. Their response was as follows:

"1. This veteran served on Active Duty from October 1940 to October 1966 (sic) (26 years). This lymphoma was diagnosed on August 1976 at age 57. The veteran died in October 1977, at age 58, of malignant lymphoma 11 years after retirement.

"2. It is stated that the veteran took part in at least two to possibly six atomic blasts in 1957 at age 38, nineteen years before the diagnosis of lymphoma and twenty years before his death.

"3. The recorded radiation exposure was 0.013 rems which is extremely low and equals a standard chest X-ray film exposure, however this value is being contested and the remand suggests that we consider this case independent of the amount of radiation which is extremely difficult to do. A problem left to be resolved is the amount of radiation that this veteran received.

"4. The staff reviewed the three submitted slides, which they believe represents a malignant lymphoma, nodular, moderately well differentiated or follicular center cell-type lymphoma in a lymph node and the bone marrow. This is essentially in agreement with the previous diagnoses made on this case.

"5. It should be pointed out that lymphomas were relatively rare after the Hiroshima-Nagasaki experience but they peaked at 10 to 14 years after exposure. It should also be noted that the median age was around 40 years which is very young for this type of lymphoma.

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"6. It is curious that if this veteran were to develop this type of lymphoma, without any history of atomic bomb exposure, his age of onset would be around the median age of those patients with this particular type of tumor. If radiation was a factor in this case, it could be assumed from the previous data that the veteran would have developed this process 6 to 10 years earlier, (approximately 10 to 14 years after his atomic blast exposure.)

"7. In summary, the staff believes on the basis of the age of occurrence and the long interval after exposure that this lymphoma probably was not radiation induced."

The foregoing evidence was considered by the Board in reaching its decision of December 1979. The evidence listed hereafter has been received since the date of that decision.

A letter, dated February 1980, has been received from the appellant's representative. This letter voices disagreement with the Board's decision of December 1979. The representative alleges that the Board, in reaching its decision of December 1979, failed to properly consider the doctrine of reasonable doubt. The representative points out that the claimant is dependent upon the Government sources for evidence to support her claim, and that the Government sources have not provided the necessary information. The letter also contains disagreement with the reasoning and conclusions of the prior decision.

Statements, dated January 1980, have been received from the following individuals: John W. Gofman, M.D., Ph.D., Professor Emeritus, Medical Physics, University of California; and Rosalie Bertell, Ph.D., GNSH, of the Ministry of Concern for Public Health. These statements contain arguments against the Board's decision of December 1979.

A 17-page "Medical Review" of this case by Dr. Thomas F. Mancuso, Research Professor, Department of Industrial Environment Health Sciences, Graduate School of Public Health, University of Pittsburgh, has been received. This statement contains detailed arguments against the conclusions reached by the Board in its prior decision, and contains the following opinion:

"I have carefully reviewed the available files for (the veteran) and conclude that it is highly

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probable that the histiocytic lymphoma that he sustained was directly related to his prior exposure to ionizing radiation during the atomic bomb testing. I recommend approval of his claim."

A statement, dated January 1980, has been received from Karl Z. Morgan, Neely Professor, School of Nuclear Engineering, Georgia Institute of Technology. The text of the statement, directed to the appellant, is as follows:

"I am sorry the responsible authorities have delayed so long in providing compensation for the radiation exposure which seems most likely to be the cause of your husband's lymphocytic lymphoma that resulted in his death.

"From my experience at two weapons tests in the South Pacific and many tests at the Nevada test site, I can assure you that your husband's radiation dose could have been very high at test Hood when he went toward ground zero only 15 minutes after the detonation. I had a research program to determine the dose received by survivors of the weapons explosions at Hiroshima and Nagasaki which required us to go within a few hundred yards of ground zero at many of the tests in Nevada and for an hour or more after a detonation there were many objects (e.g. pieces of the tower) that had surface dose readings greater than 100 rads per hour and often the general dose readings were greater than 10 rad per hour. If he spent any time near some of these "hot" objects, he could easily have received very high doses."

In accordance with the Board's remand decision of June 1980, the Defense Nuclear Agency procured a dose reconstruction for all Headquarters Staff Members of the 4th Marine Corps Provisional Atomic Exercise Brigade. The cover letter of the report contains a notation that the Defense Nuclear Agency considers this effort to have established a reasonable envelope of radiation doses for this staff for shot Hood. The dose reconstruction is an eight-page document, which includes two maps, detailing the activities of the veteran's unit during shots Hood, Priscilla and Diablo. The dose reconstruction report contains the following conclusion:

BROUDY, Charles A.

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"If a staff member of the Fourth Marine Corps Provisional Exercise Brigade had participated in all scheduled shot and staff exercise activities during the period that the brigade was at Camp Desert Rock, his total radiation dose would have been approximately 1.5 rem. It appears from the dosimetry, however, that few, if any, so participated. Under the assumption that film badges were worn at all times in the forward area, as prescribed, it is likely that a typical staff member accumulated a dose no higher than the highest film badge reading ascribed to the regular brigade staff, 1.25 rem."

A statement, dated July 1981, has been received from the Department of the Navy. This statement, directed to the appellant, indicates that, "A careful review of our records has produced no evidence of (the veteran) performing the duties of a radiation safety officer while serving as the assistant G-4 of the Fourth Marine Corps Provisional Atomic Exercise Brigade during Operation Plumbbob, the 1957 series of atmospheric nuclear weapons tests conducted at the Nevada Test Site."

The claim file was submitted to an Independent Medical Expert for an opinion. The opinion has been received, and is reproduced below. The only portion of the opinion deleted is a history of the course of the veteran's illness.

"...Mr. Broudy was a career Marine officer who served between October 1940 and October 1960. During the time that he served on active duty he was possibly exposed to radiation during a temporary assignment to the Naval Station, Treasure Island, San Francisco, California in the summer of 1948. This was however, not confirmed by the records of his documented exposure, which was 00.00 rads. He also participated in maneuvers between June 18, 1957 and July 5, 1957 at which time nuclear weapons were evidently exploded. His documented radiation exposure during that time was 13 millirads or 00.013 rads. In August 1976 he developed night sweats and saw his physician who noted an enlarged lymph axillary node on physical examination. On August 26, 1976 a left axillary node biopsy was performed, and the histiopathologic diagnosis was malignant lymphoma, mixed lymphocytic histiocytic type, nodular. Dr. L. from our Pathology Department

has reviewed the slides and is in agreement with this diagnosis....

"This gentleman developed a malignant lymphoma at age 57. We have recently completed a retrospective review of 499 patients who were diagnosed to have malignant lymphoma at Memorial Hospital between 1958 and 1969, for whom histopathologic material was available for review. The median age of these patients was 56.4 years, with a wide range of ages between 15 and over 90 years. Although non-Hodgkin's lymphoma can occur at any age, it seems that Mr. Broudy was at an age at which non-Hodgkin's lymphoma is most common in adults. (Straus, DJ, Filippa, DA, Lieberman, PH, Koziner, B, Thaler, HT, Clarkson, BD The non-Hodgkin's lymphomas. I - A respective clinical and pathologic analysis of 499 cases diagnosed between 1958 and 1969, Cancer, in press, 1981). According to a recent review, an increased incidence of malignant lymphoma was found among survivors of the atomic bomb in Hiroshima who were heavily exposed to radiation (over 100 rads kerma). The data from Nagasaki survivors is too incomplete for any definite conclusions to be made. In the group of 3,128 survivors in Hiroshima, there were four cases of lymphosarcoma (0.4 expected), 1 case of reticulum cell sarcoma (0.15 expected), and three cases of Hodgkin's disease (0.2 expected). In the two cities together, ten malignant lymphomas were observed in persons exposed to kerma greater than 100 rads and 2.3 were expected which was a greater than four-fold increase. Evidently four of the ten cases did occur between 1971 and 1974 (Committee on the Biological Effects of Ionizing Radiation, Division of Medical Sciences, Assembly of Life Sciences, National Research Council. The effects on population of exposure to low levels of ionizing radiation: 1980, Washington, DC, National Academy Press, 1980, pages 350-352).

"It seems that Mr. Broudy developed a rapidly progressing non-Hodgkin's lymphoma that was refractory to relatively standard combination chemotherapy. Although many patients have lymphomas with a more indolent course and which are more susceptible to

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treatment, there are certainly others who have a course similar to that of Mr. Broudy. Although there apparently is an increased incidence of malignant lymphoma among people exposed to radiation from nuclear weapons explosions, it seems that the amount of radiation exposure generally exceeded 100 rads. Major Broudy's documented radiation exposure from the nuclear blasts in 1957 was considerably below this level. It was even lower than the usual radiation exposure from a standard diagnostic chest x-ray. Unless he was additionally exposed to a large amount of radiation which was not documented, it seems unlikely to me that his malignant lymphoma resulted from radiation exposure that he received in 1957."

THE LAW AND REGULATIONS

The decision of the Board of Veterans Appeals is final, except that the Board may correct an obvious error in the record. Reconsideration of an appellate decision may be accorded by the Board of Veterans Appeals. (38 U.S.C. 4003; 38 C.F.R. 19.148)

Service connection may be granted for disability resulting from disease or injury incurred in or aggravated by service. (38 U.S.C. 310, 331)

Where a veteran served continuously for ninety (90) days or more during a period of war or during peacetime service after December 31, 1946, and malignant tumor becomes manifest to a degree of ten per cent (10%) within one year from date of termination of such service, such disease shall be presumed to have been incurred in service, even though there is no evidence of such disease during the period of service. This presumption is rebuttable by affirmative evidence to the contrary. (38 U.S.C. 312, 313, 337; 38 C.F.R. 3.307)

To establish service connection for the cause of the veteran's death, the evidence must show that disability incurred in or aggravated by service either caused or contributed substantially or materially to cause death. (38 U.S.C. 410; 38 C.F.R. 3.312)

It is the defined and consistently applied policy of the Veterans Administration to administer the law under a broad interpretation, consistent, however, with the facts shown in every case. When, after careful consideration of all procurable and assembled data, a reasonable doubt

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arises regarding service origin, the degree of disability, or any other point, such doubt will be resolved in favor of the claimant. By a reasonable doubt is meant one which exists by reason of the fact that the evidence does not satisfactorily prove or disprove the claim, yet a substantial doubt and one within the range of probability as distinguished from pure speculation or remote possibility. It is not a means of reconciling actual conflict or a contradiction in the evidence; the claimant is required to submit evidence sufficient to justify a belief in a fair and impartial mind that his claim is well-grounded. Mere suspicion or doubt as to the truth of any statement submitted, as distinguished from impeachment or contradiction by evidence or known facts, is not a justifiable basis for denying the application of the reasonable doubt doctrine if the entire, complete record otherwise warrants invoking this doctrine. The reasonable doubt doctrine is also applicable even in the absence of official records, particularly if the basic incident allegedly arose under combat, or similarly strenuous conditions, and is consistent with the probable results of such known hardships. (38 C.F.R. 3.102)

DISCUSSION AND EVALUATION

A final decision of the Board of Veterans Appeals may not be reversed except on a finding of obvious error. To constitute obvious error, the evidence must be so persuasive of facts contrary to the Board's prior decision as to preclude any other determination.

In its decision of December 1979, the Board found that exposure to ionizing radiation in service was not a reasonably probable factor in the development of the veteran's lymphoma. The appellant, her representative, and several learned individuals have advanced arguments against that decision. The disagreement, essentially, centers around the Board's conclusions concerning the latency period of radiation-induced lymphoma and the veteran's age when the lymphoma was manifested, and the amount of exposure the veteran received. In addition, the appellant's representative alleges that the Board did not properly consider the doctrine of reasonable doubt.

Those arguing on behalf of the claimant contend that the Board was erroneous in reasoning that, had the veteran's lymphoma been caused by radiation, the disease would have been clinically manifested at an earlier age. It is argued that the disease occurs at all ages with a rate increasing with age, and that the latency period of 19 years in the veteran's case is only five years after the peak latency period of

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10-14 years and would still be within the slope of the statistical curve. In this regard, it is argued that a radiation etiology cannot be ruled out. On the other hand, the recently obtained Independent Medical Expert opinion states that the veteran manifested lymphoma at an age at which the disease is most common in adults, irrespective of radiation exposure. This opinion specifically supports the opinion of the Armed Forces Institute of Pathology reported in the prior decision. Contrary to Dr. Mancuso's opinion, the Board did not focus entirely on veteran's age at which the cancer occurred; the Board also focused on the number of years after exposure when the veteran manifested lymphoma.

However, we do not feel that the case was decided on the foregoing point. We feel that, since an etiological relationship is possible between the development of lymphoma and exposure to ionizing radiation, the case must turn on the amount of exposure the veteran received. Issue is taken with the veteran's recorded exposure of 13 mr. Numerous opinions have been advanced in support of the contention that the veteran's exposure was much greater. Dr. von Hippel first theorized that the eight-hour dose at a distance of 400 meters from the hypocenter of shot Hood would have been 60 rads, and offered an opinion that, based on information provided to him by the appellant, it appeared plausible that the veteran could have received a dose of the order of 10 rems or more from residual radiation associated with activation products. Dr. von Hippel was unable to estimate the fallout radiation and estimated that the direct radiation from the blast would have been minimal. This estimate of minimal direct radiation is consistent with the recorded exposure of 13 mr, if the veteran did not enter the forward area. Dr. von Hippel later revised his estimate upward by a factor of 10. According to Dr. von Hippel, the veteran's estimated exposure should have been 100 rads or more. The remaining individuals who opine that the veteran received an exposure of much more than 13 mr do not offer estimates of exposure and also base their opinions on information supplied by the appellant. We note that the appellant did not gain information from the veteran as to his duties or maneuvers during the tests. The appellant has speculated, based on information gained through her own investigation, that the veteran entered the forward area and remained there for a number of hours. At this point, we must bring into this discussion the reconstructed exposure data for the veteran's unit recently provided by the Defense Nuclear Agency. This reconstruction indicates that it is unlikely that the veteran's accumulated dose exceeded 1.5 rem, regardless of whether the veteran wore a film badge himself. This estimate was made with a knowledge of the veteran's assigned duties and was made in relation to the exposures of other members of the veteran's unit who did wear film badges. Numerous

BROUDY, Charles, A.

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tangential arguments, such as unreliable dosimetry, internal exposure, plutonium ingestion and nonexistent or falsified records, are speculative in nature and, in view of the state of the record, can only be rebutted by speculation on our part. Speculation will not support a decision; we are constrained to reach a decision based on reasonable probability, as opposed to speculation.

After a careful and thorough review of the entire record, we find that the arguments and estimates advanced for and by the appellant in support of the contention that the veteran received very high exposure are based on speculation concerning the veteran's activities during the tests. On the other hand, the dose reconstruction provided by the Defense Nuclear Agency is based on knowledge of the veteran's duties. We have no reason to believe that the veteran's exposure would have exceeded the highest exposure for a member of the regular brigade staff to the extent postulated.

It has been established that lymphoma can result from exposure to radiation. According to the independent medical expert opinion, it is unlikely that the veteran's lymphoma resulted from radiation exposure, unless his exposure was in the area of 100 rads or more. As discussed above, we feel that the totality of the evidence does not establish a reasonable probability that the veteran's exposure was anywhere close to that level. The opinions and studies submitted in support of the appellant's contention must be viewed in light of the opinion of the independent medical expert.

It is also contended that the Board failed to properly consider the doctrine of reasonable doubt in reaching its decision of December 1979. In reviewing this case, we do not find that the evidence before the Board in December 1979 or at the present time raises a reasonable doubt, as opposed to a remote possibility, that the veteran's fatal lymphoma resulted from exposure to radiation during service.

On reexamination, we find no obvious error in the Board's prior decision. Accordingly, the Board's decision of December 1979 is affirmed as a final determination.

FINDING OF FACT

The Board finds no error in its decision of December 1979.

BROUDY, Charles A.

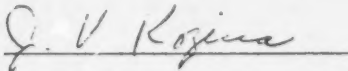
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CONCLUSION OF LAW

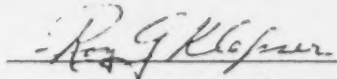
The decision entered by the Board in December 1979 denying service connection for the cause of the veteran's death represents the correct application of the governing laws and regulations to the facts found to be shown by the evidence and does not involve obvious error.
(38 U.S.C. 4003; 38 C.F.R. 19.148)

DECISION

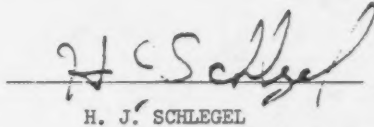
Obvious error not being found on reconsideration, the Board's decision of December 1979 is affirmed as a final determination. On reconsideration, the benefit sought on appeal remains denied.



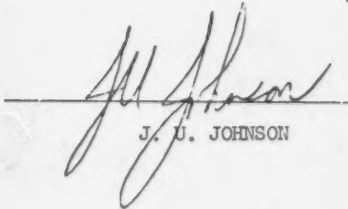
J. V. KOZINA



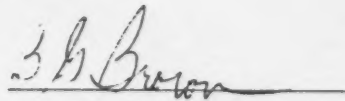
ROY G. KLEPSEK, M. D.



H. J. SCHLEGEL



J. U. JOHNSON



B. G. BROWN, M. D.



R. B. STANDEFER



STANFORD UNIVERSITY MEDICAL CENTER

STANFORD, CALIFORNIA 94305 • (415) 497-7311

DEPARTMENT OF RADIOLOGY
CANCER BIOLOGY RESEARCH LABORATORY
Henry S. Kaplan, M.D., Director

March 23, 1982

Alice P. Broudy
33492 Periwinkle Drive
Laguna Niguel, CA 92677

Dear Mrs. Broudy:

In reply to your letter of March 9, I regret that it is not really possible to give a definitive answer to the questions you have raised. We certainly do see many histiocytic-lymphocytic lymphomas in patients in their 50's and 60's who have not been known to have had any significant radiation exposure, and it would thus, in my opinion, be extremely difficult to prove conclusively that your husband's lymphoma was attributable to his earlier radiation exposure. On the other hand, the point the government makes about the long latent period between his exposure and the diagnosis of lymphoma is not necessarily valid, since the Japanese atomic bomb survivors who later developed an increased incidence of lymphomas, did so after between 15 and 20 years, in contrast to those who developed leukemia, in whom the onset was much earlier. I would suggest that you contact Mr. Seymour Jablon, National Academy of Sciences, 2101 Constitution Avenue NW, Washington, DC 20418. He is an authority on radiation carcinogenesis and on the Japanese A-bomb survivor data, and perhaps he can give you more definitive answers to your questions, although I am doubtful because the questions don't readily lend themselves to definitive answers.

Sincerely,

Henry S. Kaplan, M.D.

HSK/lh



MINISTRY OF CONCERN FOR PUBLIC HEALTH
 (716) 874-5955 151 EAST STREET • BUFFALO • NEW YORK • 14207

January 18, 1980

Pat Broudy
 33492 Periwinkle Drive
 Laguna Niguel, CA. 92677

Dear Pat:

I am sorry that your claim for a service-related death ruling for Charles was refused. As I read the report XC 22 660 616, I felt this refusal was hinging on two pieces of information: (1.) on page 2, referring to a pre-retirement physical WBC of 5,700, and (2.) on page 8, the age of Charles at time of death. The question of government estimates of radiation exposure being ridiculously low is an old one and was well handled by Dr. Frank von Hippel, so I will not consider it in this letter. Rather, I will address the other two points:

1. In "The Effects of Nuclear Weapons," Third Edition, 1977, compiled and edited by Glasstone and Dolan for D.O.D. and D.O.E., paragraph 12.126 describes radiation effects "in the sublethal range, i.e., about 200 rems or less" on white blood cell levels. One can expect a transitory increase during the first two days or so, due to damage of bone marrow which releases cells in the process of maturing, followed by a decrease in the number of cells to below normal levels. "During the seventh or eighth weeks, the white cell count becomes stabilized at low levels and a minimum probably occurs at this time. An upward trend is observed in succeeding weeks but complete recovery may require several months or more." Recovery, of course, is delayed by continued radiation abuse from both external and internal exposures. Your husband's WBC before exposure was 6,950, while at time of discharge it was 5,700. This is typical of radiation exposure. This is not a sign of improved health or normal blood composition under the circumstances.

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Global Education Associates

792 Park Ave East Orange, New Jersey 07033

2. In the U.S. the ages of greatest increase in rate of lymphosarcoma, reticulosarcoma and related lymphomas in males is between 35 and 60. The absolute rate, however, is highest for age 75-84, namely 27.36 cases per 100,000. The expected rate for men 55-59 is about 10.86 per 100,000. The statement in the report, page 8, about Charles' age at onset of disease being "median," when the disease occurs at all ages with a rate increasing with age, is meaningless. The staff seems to be under the impression that if a normally distributed Japanese population (ranging from ill to healthy and all ages) is exposed to an atom bomb blast and its after-effects, and experiences an increase in lymphoma rate with median age of victims around 40 years, the same effect should occur among military personnel selected for good health, ages 20 to 40, and not subjected to the disruption of health delivery systems, sewage and garbage disposal, etc. which occur in a bombed city! I would have thought the Board of Veterans Appeals would have persons advising them on health effects of radiation exposure who were familiar with the pitfalls of such a gross presumption, namely that the median age of occurrence of lymphoma would remain the same in spite of such large population and environmental differences. The conclusion is indefensible on scientific grounds.

I hope this clarification is of some use to you. You may use it in your appeal if you wish. I am enclosing a curriculum vitae to establish my credentials in epidemiology and public health, should this be necessary.

Sincerely,

Rosalie Bertell

Rosalie Bertell, PhD, GSH

RB:cw
Enc.

Irwin D.J. Bross, Ph.D.
 Director of Biostatistics
 Roswell Park Memorial Institute
 666 Elm Street
 Buffalo, N.Y. 14263

No opinions here expressed should be construed as reflecting official positions of the administration of
 Roswell Park Memorial Institute or of the N.Y. State Health Department

March 17, 1982

Alice P. Broudy
 33492 Periwinkle Drive
 Laguna Niguel, California 92677

Dear Mrs. Broudy:

This is in response to your letter of March 4, 1982 in which you give the particulars of your lawsuit against the government, a landmark case in that you won permission to sue.

The statements concerning your husband's exposure to nuclear testing and his death 20 years later of lymphoma are assumed valid in the following comments. Establishing these as matters of fact would be your responsibility in the lawsuit.

On the basis of your statements, I can answer the specific questions raised directly or implicitly in your letter:

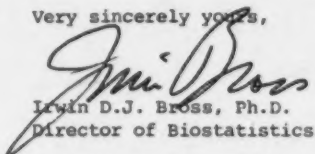
- (1) Stage IVB is a late or final stage of lymphoma.
- (2) If he died 20 years later, the disease must have been present in his body prior to this time since the latent period for lymphomas would probably be seven or more years.
- (3) Lymphoma is (along with leukemia and lung cancer and several other cancers) a characteristically radiogenic disease. Specifically, it could have been caused by exposures to low level ionizing radiation at a nuclear test.
- (4) In the literature on radiogenic disease, lymphoma is recognized as such. Studies of Atomic Veterans carried out by Federal Agencies have repeatedly found excess lymphoma. At the Congressional hearing on radiation hazards in 1978, cases of lymphoma from nuclear weapons testing were discussed in some detail. This testimony is given in Serial No. 95-179 and the Congressional Record.

As a public health scientist and cancer researcher since 1949, Director of Biostatistics at Roswell Park Memorial Institute for Cancer Research since 1959, and the author of numerous scientific articles and reports on the hazards of low-level ionizing radiation since 1969, I can attest to the above statements. My more than 300 scientific papers and

3 books (the latest, in 1981, on radiation research), as well as long-standing status as fellow of the American Statistical Association and designation of fellow of the recently established American College of Epidemiology establish my expertise in biostatistical and epidemiological studies of human hazards of ionizing radiation.

I would hope that the above commentary will be of some help to you. Since it is a plain statement of well-known facts, I believe that it was remiss of your husband's physician not to provide a letter which stated these facts. He owed this to his patient. Perhaps if you show him this letter, he might be willing to reconsider. From a legal standpoint, it would be better for this testimony to come from him since he has first hand knowledge of his patient.

Very sincerely yours,



Irwin D.J. Bross, Ph.D.
Director of Biostatistics

IDJB/mak



BOARD OF VETERANS APPEALS
WASHINGTON, D.C. 20420

NOV 23 1979

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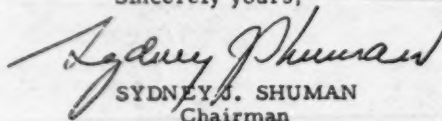
IN REPLY
REFER TO: 014C 1
SS 479 32 0322

Mr. Orville E. Kelly
1109 Franklin Street
Burlington, IA 52601

Dear Mr. Kelly:

The Board has made its decision on the appeal in this case. I am enclosing a copy, which is self-explanatory. Your records are being returned to the office which has jurisdiction over your claim. Copies are also being sent to the Honorable Alan Cranston, Chairman, Committee on Veterans' Affairs and The American Legion.

Sincerely yours,



SYDNEY S. SHUMAN
Chairman

Enclosure
Copy of BVA decision
FL 1-1
Jan 1975(RS)

"To care for him who shall have borne the battle, and for his widow, and his orphan." - ABRAHAM LINCOLN

IN THE APPEAL OF
ORVILLE E. KELLY

SS 479 32 0322



BOARD OF VETERANS APPEALS
WASHINGTON, D.C. 20420

FINDINGS AND DECISION

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)

DOCKET NO. 79-14 907

DATE NOV 23 1979

THE ISSUE

Entitlement to service connection for a malignant reticuloendothelial process.

REPRESENTATION

Appellant represented by: The American Legion

WITNESS AT HEARING ON APPEAL

Orville E. Kelly, appellant

CONSULTATIONS BY THE BOARD

J. E. Day, Staff Legal Adviser

Armed Forces Institute of Pathology

KELLY, Orville E.

SS 479 32 0322

ACTIONS LEADING TO PRESENT APPELLATE STATUS

A great deal of evidence has been compiled in this case as a result of exhaustive efforts by the veteran himself and by the American Legion in his behalf, as well as extensive development by the Veterans Administration. It is impractical to recite this evidence in its entirety here. Therefore, we are describing (summarizing in some instances) only so much as is necessary to understand the events on which the veteran's claim is based.

The central issues of the case are thoroughly explored in the several expert opinions set forth in their entirety, below. To comply with the Privacy Act (38 U.S.C. 552a), the authors of these opinions have not been identified. They are prominent in their respective fields and well qualified to comment upon the matters discussed.

The Honorable Alan Cranston, United States Senator, has expressed interest in this appeal.

CONTENTIONS

The veteran and his representative contend that his cancer is the result of exposure to radiation during participation in atomic testing in service. Principally, it is argued that the various estimates of risk proposed in the expert opinions raise a reasonable doubt that should be resolved in the veteran's favor.

THE EVIDENCE

The veteran served on active duty from July 1948 to May 1960. Service medical records contain no suggestion of any blood or lymph abnormalities. The report of the veteran's separation physical examination shows that he was stationed for one year at the Pacific Proving Grounds, Eniwetok Atoll, Marshall Islands, and was subjected to 3.15 roentgens of radioactivity. This is the same figure that appears on the veteran's "Record of Exposure to Ionizing Radiation," which is dated June 27 (year unspecified) and indicates gamma radiation.

Service personnel records show that the veteran arrived at Eniwetok on November 29, 1957, and departed on November 18, 1958.

Records of the B. Memorial Hospital and the University of I. Hospitals show that malignant lymphoma was diagnosed in 1973.

KELLY, Orville E.

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Information obtained from the Department of Defense shows that the veteran was exposed to 3, 445 millirems during the period April 10, 1958, to August 31, 1958.

A statement was received from C. J., who was stationed on the Island of Japtan, Eniwetok Atoll, during 1958 and early 1959. He said that, during a good part of this time, the veteran was the noncommissioned officer in charge of the island. During nuclear tests, all personnel were grouped together and told to face the blast. They were fully clothed, wearing dark goggles, but still felt the heat and force from the explosions. They wore badges which were monitored for radiation levels, and in some instances, persons were evacuated from the island after receiving what were considered to be unsafe dosages. They also used Geiger counters to measure fallout. On occasions, particularly if it rained, readings would be much higher than levels considered to be safe. Water for drinking, cooking and other functions was taken from the lagoon where the blasts took place. This island was the closest island to the blasts that was occupied by personnel. The island would shake and tremble, as during an earthquake.

A personal hearing was conducted in April 1978. The veteran testified at length with regard to his participation in the nuclear tests, his subsequent development of evidence in support of his claim, and other matters. At that time he submitted an evidence folder containing a selection of medical and technical information regarding radiation, nuclear tests, and the resulting health effects. A map of Eniwetok Atoll shows the position of Japtan Island with respect to an area described by the veteran as the "general test area." The distance from this area to Japtan is approximately 15,000 yards at its closest point, and 38,000 yards at its farthest point. The folder also contains the testimony of several individuals before Congress in February 1978. Pertinent portions of this testimony are to the effect that there is no radiation dose that is not attended by some risk of a stochastic effect, and that the "doubling dose" for leukemia is between 3 and 5 rads. The folder also contains letters to the veteran from prominent scientists to the effect that an important component of the veteran's dosage may have been beta radiation, which was not registered on his film badge. Beta-radiating particles could be inhaled. It was also stated that measurements at the Pacific Test sites showed a ratio of beta to gamma radiation of from 3:1 to 600:1 in some locations. Also included in the evidence folder is a list of 22 nuclear tests that occurred during the period that the veteran was assigned to Japtan Island. These ranged in yield from 0 (one test) to 9 megatons.

KELLY, Orville E.

SS 479 32 0322

The veteran has also submitted copies of several newspaper items and other articles concerning cancer, nuclear tests and radiation.

The Office of the Chief Medical Director of the Veterans Administration was requested to render an opinion regarding the relationship of lymphocytic lymphoma to exposure to ionizing radiation. The response follows:

"1. The claims folder of veteran (O.E.K.) has been reviewed thoroughly to determine whether or not there is a cause and effect relationship between his exposure to ionizing radiation during his service at Eniwetok, the Marshall Islands, from Nov. 1957 to Nov. 1958, and his subsequent development of Lymphocytic Lymphoma, diagnosed in June 1973.

"2. Major (A.S.) of the Pentagon verifies that Mr. K. was exposed to 3.445 Rems during the period from 4/10/58 to 8/31/58.

"3. 3.445 Rem is far below the dose level at which leukemia is considered to develop from radiation exposure.

"4. This is below the 5.000 Rem limit established by the Nuclear Regulatory Commission as the safe, annual, occupational exposure level for radiation workers.

5. Section 8.13, "Appendix to Regulatory Guide" of the NRC, states that no clinical evidence of harm would be expected in an adult working within these levels (5,000 millirems per year) for a lifetime.

"6. Section 8.13 further states that medical evidence gathered over the past 50 years indicates no clinically observable injuries to individuals due to radiation exposures when established radiation limits are not exceeded. This was true even for exposure limits, which were many times higher than present limits.

"7. Because one can answer the question of a cause and effect relationship between exposure to radiation and disease only on the basis of verifiable

- 4 -

KELLY, Orville E.

SS 479 32 0322

facts and data, there is a remote possibility, rather than a reasonable probability, that Mr.(K.'s) exposure to ionizing radiation in 1958 could have caused his Lymphocytic Lymphoma, diagnosed in 1974."

Following the denial of his claim, the veteran obtained the following opinion from a professor of medical physics with a long history of work in the nuclear field. He replied as follows:

"I have completed my review of the records you have sent me and the Veterans Administration denial of your claim.

"It is abundantly clear to me on review of the records and the basis for the VA decision that the Veterans Administration is totally and unequivocally incorrect in the basis for denial of your claim. If I were deposed or were to testify in a Hearing I would state that there is a definite medical probability that your cancer is related to the radiation exposure you experienced while in the Armed Services, and that, therefore, on the basis of VA procedures, there is every reason for them to grant you the relief you request. I have no doubts at all about the correctness of my position in this matter, both as a physician and as an expert in radiation carcinogenesis.

"Let me take up the specific statements by the Veterans Administration. In their letter dated August 13, 1974, they state 'However, there were no abnormalities noted at discharge. There is no evidence in file to indicate there is any relationship between your service and your current condition. Therefore, service-connection must be denied.'

"This decision is clearly and unequivocally erroneous on the following grounds. First, anyone conversant with the fact that there is a long silent period between radiation exposure and cancer becoming clinically evident would realize that the absence of abnormalities at discharge is what is to be expected, since the discharge occurred during the latent period of your cancer development. Therefore, this point of the VA must be dismissed as erroneous. Second, there is clear and obvious evidence in file of the relationship between your service and your current condition. The fact that your film badge record

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shows 3.15 Roentgens is itself evidence that you received a sizable amount of radiation and this creates the medical probability that your disease was caused by radiation received during service. If we add the fact that the film badge obviously does not cover the entire period and there could well have been internal exposure also, the evidence is further strengthened. Thus, the file does indeed have the requisite evidence.

"Next, in the VA letter of July 20, 1978, under the section titled 'Reason for Decision', the following is stated

'The reported exposure of Mr.(K.) to 3.445 rems of ionizing radiation is below the 5.000 rem limit established by the Nuclear Regulatory Commission as the safe exposure level for radiation workers. Medical evidence gathered over the past 50 years indicates no clinically observable injuries to individuals due to radiation exposure when the 5.000 rem limit is not exceeded'

"Nothing in this Veterans Administration statement is correct, and it is totally contrary to the consensus of expert opinion on this matter worldwide.

"First of all, it is absolutely false that the 5.000 rem limit is safe, or that the Nuclear Regulatory Commission or anyone else can make the statement that this is a "safe exposure level for radiation workers". Anyone who makes such a statement is simply irresponsible.

"Second, the statement that medical evidence gathered over the past 50 years indicates no clinically observable injuries to individuals due to radiation exposure when the 5.000 rem limit is not exceeded IS A MANIFESTLY FALSE STATEMENT WHICH CANNOT BE CORROBORATED BY ANY MEDICAL EVIDENCE WHATSOEVER. INDEED, ALL THE REAL EVIDENCE IS TO THE CONTRARY.

"Therefore, since the basis for denial is totally erroneous, and since my opinion is that there is definitely a medical probability that your cancer

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was induced by the radiation you received in the service, it is my opinion that the Veterans Administration should reverse itself and grant your claim."

In addition, the veteran received a letter from a British physician who had conducted epidemiological studies concerning medical irradiation and cancer. The letter states, in pertinent part:

"...I can assure you that lymphomas are recognized by the International Commission on Radiation Protection as one of the groups of cancers which are liable to be caused by radiation, and that evidence from our study of Hanford workers suggests that your risk of developing this condition was increased by your exposure environment in the 1957-58 nuclear testings even if you only received a total of 3.15 roentgens during your 13 months at Eniwetok."

The Chief Benefits Director of the Veterans Administration requested the chairman of the medical department of a prominent national laboratory to review the evidence and render an opinion. His response follows:

"The evaluation of the claim of (O.E.K) that exposure to 3.15 R is the likely cause of his lymphocytic lymphoma is very difficult. I have communicated with individuals in Radiation Effects Research Foundation, Hiroshima, Japan and the National Academy of Sciences to be sure I had the most up-to-date information.

The facts are:

"1. An increased incidence of lymphoma has now been observed in the survivors exposed at Hiroshima, Japan.

"2. An increased incidence was first observed in the 1959-1962 period or 14-17 years after exposure in the over 100 rad group. In the under 10 rad exposure the increased incidence is very questionable.

"3. The people exposed at Hiroshima received a mixed neutron gamma exposure.

"4. The people exposed at Nagasaki received almost exclusively gamma radiation comparable to the type of radiation received by (Mr. K.).

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"5. There are 0.18 excess deaths per million persons per rad per year. Thus for the 20 years since Mr. (K.) received 3.15 rads there would be $20 \times 0.18 \times 3.15$ or 11.34 excess deaths per million persons during this 20 year period or 1.13 per 100,000 persons.

"6. The excess deaths must be compared to the natural incidence of lymphoma deaths in the white male population in the U.S. for comparable age. Mr. (K.) was exposed in 1958; born in 1930 and hence 38 years of age at time of exposure.

"The National Cancer Institute incidence of death from non-Hodgkin's lymphoma per five year age increments is:

"Age	25-29	30-34	35-39	40-44	45-49
Deaths/100,000/yr.	2.1	2.2	4.0	5.8	8.4
Total for 5 yr. interval	10.5	11	20	29	42

Total deaths/24 yr. period per 100,000 persons is 112.

"7. To make a direct comparison for a 24 year period the excess deaths from a 3.15 rad exposure would be $24 \times 0.18 \times 3.15$ or 13.6 per million or 1.36 per 100,000. The total deaths from lymphoma per 100,000 persons over the 24 year period would be 113.4. Hence $1.36 \div 113.4 \times 100$ or 1.2 percent of the deaths during this interval could be ascribed to exposure to the 3.15 rads gamma exposure.

"Some critics believe the cancer rates in Japan may be underestimated by as much as a factor of 10. Thus the probability that Mr. (K.'s) lymphocytic lymphoma is due to the prior exposure to 3.15 rads may be between 1 in 100 to 1 in 10.

"Mr. (K.) was exposed to only gamma and beta (no neutrons) and the beta penetrates only a few millimeters maximum and then would have nearly no effect on blood forming tissues. It is emphasized that excess lymphomas were observed only in Japanese exposed to mixed neutron/gamma at doses in excess of 100 rads. The above estimate of the probability that his lymphoma is associated with exposure to

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gamma is based on the conservative but unproved assumption that the incidence of cancer is linearly related to gamma ray exposure and that there is no threshold dose below which radiation does not increase the incidence of cancer.

"I have carefully read his entire history as presented and all of the accompanying documentary material about relationship of radiation to development of cancer. My opinion is based on what I believe to be the only factual observations on the relationship of radiation exposure to development of excess lymphoma in man. The references are:

"a) Beebe, G.W., H. Kato and C.E. Land. Studies of the Mortality of A-bomb Survivors Mortality and Radiation Dose 1950-1974. Radiation Research 75, 138-201 (1978).

"b) Nishiyama, H., R.E. Anderson, T. Ishimeru, K. Ishida, Y. Ii, and N. Okabe. The Incidence of Malignant Lymphomas and Multiple Myelomas in Hiroshima and Nagasaki Atomic Bomb Survivors. Cancer 32, 1301-1309 (1973)."

The Chief Benefits Director also requested an opinion from the director of the National Cancer Institute. He responded with the following information:

"In response to your letter of January 19, Dr. (S.) and I have reviewed the enclosed file of Mr. (O.K.), which is being returned herewith.

"Information in the file indicates that Mr. (K.) was stationed in the vicinity of Eniwetok during a period of nuclear weapons testing in 1958, when he may have been exposed repeatedly to radiation emitted from more than 20 nuclear detonations and from the resulting fallout. The cumulative radiation dose recorded on his film badge is specified to have been 3.445 rems, which is well beneath the 5 rems maximum permissible yearly dose for radiation workers. It is conceivable, however, that in addition to the radiation recorded on the film badge dose, which registered principally gamma rays, there was additional irradiation from external beta rays and from internally deposited radionuclides. The

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extent to which these additional sources of radiation might have increased the dose to his blood-forming and lymphatic tissues is uncertain. In any case, however, there is no evidence that Mr. (K.) experienced radiation burns of the skin or any of the symptoms of radiation sickness typically associated with doses to hemopoietic organs in the range of 100 rems or more.

"In June of 1973, according to the file, Mr. (K.) was diagnosed to have lymphocytic lymphoma, and he has since raised the question whether his development of the disease may have resulted from his exposure to radiation 15 years earlier. The answer to this question depends on 1) whether radiation can cause lymphocytic lymphoma, and 2) if so, whether the dose Mr. (K.) received was large enough to have played a significant role in comparison with other causative factors (i.e., was his disease likely to have resulted primarily from the radiation he received or primarily from some other cause).

"As concerns the ability of radiation to cause lymphocytic lymphoma, the evidence derived from long-term studies of atomic bomb survivors in Hiroshima and Nagasaki, and from studies of other irradiated populations, points to the existence of a causal relationship between irradiation and lymphomas in general. The cause-effect relationship is not as well established, however, as is the relationship between radiation and leukemia, nor does there appear to be as large an increase in the incidence of lymphoma per unit dose of radiation. For all types of lymphomas combined in A-bomb survivors, the age-adjusted regression estimate of absolute risk over the period from 5-to-29 years after irradiation (with 90% confidence intervals) is 0.18 (0.06-0.29) excess deaths per million person-years (Beebe et al., Radiation Research 75: 138-201, 1978). If the risk were assumed to be proportional to dose, which remains to be proven, the above risk estimate would correspond to a doubling dose of about 250 rems for increasing the overall lymphoma incidence; i.e., a dose of 250 rems would be required to double the incidence of the disease."

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"In considering the contribution that Mr. (K.'s) radiation exposure may have made to his subsequent development of lymphoma, it is necessary to consider the magnitude of his radiation dose in relation to the dose required to double the incidence of the disease. If the average dose to his blood-forming and lymphoid tissues is assumed to be equivalent to his film badge reading (namely, about 3.4 rems), if the doubling dose for his type of lymphoma is assumed to be 250 rems, and if the risk is assumed to be strictly proportional to the dose over the dose range of interest, then his irradiation could be inferred to have increased his risk of the disease by 1.4 per cent. In other words, it could be concluded that his disease was less than 2 per cent attributable to the radiation he received and 98 per cent attributable to other, so-called "natural," causes.

"In view of the many uncertainties in the above analysis, the probability that radiation contributed to the causation of his disease cannot be specified with confidence or expressed in precise numerical terms. The percentage figures given above must, therefore, be interpreted with great reservation.

"I hope that this information may be helpful to you. Please don't hesitate to call on me if there is anything we can do to be of further assistance."

The previously mentioned professor of medical physics was also given the file to study and render a more complete opinion. He responded:

"I have carefully reviewed the claim of (O.E.K) that his lymphoma was associated with exposure to radiation while he was in service. I conclude that the claim is valid, and that a highly reasonable probability, not possibility, exists that his claim is correct concerning the causation of his disease.

"I shall treat the issues in this case in two parts:

- (a) the actual dose received
- (b) the effects to be anticipated from such dose.

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"(a) The actual dose received:

"In the file, there is a letter from (J.J.S.), M.D. to Chief, Benefits Director, dated June 13, 1978 discussing the case of (O.K.). In that letter two points are of consequence:

"1. The claims folder of veteran (O.E.K.) has been reviewed thoroughly to determine whether or not there is a cause and effect relationship between his exposure to ionizing radiation during his service at Eniwetok, the Marshall Islands, from November 1957 to November, 1958, and his subsequent development of Lymphocytic Lymphoma, diagnosed in June, 1973.

"2. Major (A.S.) of the Pentagon verifies that Mr. (K.) was exposed to 3.445 Rems during the period from 4/10/58 to 8/31/58.

"Let me comment on this letter and the record. In thirty years of participation in industrial medicine involving radiation exposure, I have never seen a shabbier record of exposures than is the case here. It is absolutely unthinkable that there does not exist an entire series of film badge records for (O.K.) not only for the little period of 4/10/58 to 8/31/58, but for the entire period that Mr. (K.) was in that high risk-of-exposure region. And such records should show the film badge exposures by successive weeks, or at worst, successive months. There can be no explanation for the absence of such records other than

"(a) gross incompetence in those responsible for Mr. (K.'s) health while in the service, or

"(b) a deliberate effort to withhold the records to hide some undesirable information.

"I realize that these are serious charges, but I believe on good grounds that I am most likely understating the case and not overstating it. Let me explain why.

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"From 1954 through 1957, I not only organized the Medical Department of the Lawrence Livermore Laboratory, but I served as its chief physician during that period. The Livermore Laboratory was one of two laboratories designing the devices that were tested in the Pacific area where Mr. (K.) was working. Now, I know from first hand experience what the state of the art was at that time. Film badges were in routine use for all persons with any conceivable basis for getting radiation exposure. I reviewed such exposure records on a weekly basis as medical director. Certainly for those in the forward areas, where exposure was even more of a possibility than at the Laboratory, the records should have been even more meticulously kept than at the Laboratory.

"Instead we find the radiation exposure record a total shambles, covering only a small fraction of the period of potential exposure, and for that not even providing what I would have insisted, as medical director, upon as a minimum set of film badge records.

"I find discussions of this case, including Dr. (C.s) analysis based upon an exposure of 3.15 rems as absolutely absurd and irresponsible. All we know, from some inadequate records from Major (S.) (not really a record at all in the required sense) is that At Least 3.445 rems was accumulated, for a part of the period of work. We have no record at all about all the other periods. Moreover, we have no records of the extent of internal exposure that may have occurred from ingestion and/or inhalation while Mr. (K.) was there. We do not have a single record of urinalysis to ascertain any internal exposure.

"It is my opinion that it represents nothing but the crudest of Catch-22 procedures for the Government to take the position that Mr. (K.) should provide his records of exposure. That is the responsibility of the Government not Mr. (K.). The Government has failed in a vital responsibility.

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Given this failure, the best we can do under the circumstances, and that is the very minimum that should be expected, is to make a reasonable estimate of the true total exposure, rather than this shabby record of 3.445 rems.

"Since the total time of work was approximately three times the period described by Major (S.), the dose should be multiplied by a factor of three. Then, to account for the failure to test for internal exposure, that dose should again be multiplied by a factor of two. I think this is very conservative handling of this matter.

"On this basis, we would arrive at a final dose of 6 times 3.445 rems, or 20.7 rems total exposure. I state that this is conservative for the following reason. We really do not know from Major (S.) that Mr. (K.) was monitored for the total period of the (S.) report, 4/57 to 8/57. For all we know, he may have only been monitored for a small part of even that period, and if that were true, the real dose could be well above the 20.7 rems I have estimated above.

"(b) The Effects to be Anticipated from the Dose

Sufficient knowledge concerning radiation causation of cancer has accumulated that we should not permit so-called experts to hide behind such statements as 'the only factual data' show this or that. In any exposure of a population, if the numbers exposed at a given level are too few, then the numbers of disease cases are few. That is so elementary that it is shocking to see scientists hide behind this fraud, and say 'inadequate evidence exists', or 'the only factual data'.

"By now the best evidence on how much malignant disease is increased per rem comes from the analysis of the Hanford workers. I have personally conducted an independent study of the prime data for the Hanford workers, such data having been provided to me by Dr. (T.M.). My report is currently under consideration for publication in the journal, Health Physics. I can provide that report to you if you so desire.

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"My best estimate, for cancers overall, is that 43.5 rems, for the age group comparable to Mr. (K.) at the time of his exposure, will result in a 100% increase in the risk of cancer. This is in good agreement with the (S.)-(M.)-(K.) estimate, for cancers overall, of 33 rems. I do not believe the evidence justifies any estimate that one form of cancer is more or less likely to be induced by radiation than another when described by the dose required to give 100% increase. I have detailed my reasons for this in extenso in my analysis of the Hanford workers, and I have done so in other prior publications. Lymphoma is, as Dr. (C.) concedes, one of the cancers proved to be radiation-induced. The appropriate figure to use is 43.5 rems as that dose to increase the incidence by 100%. In using that figure I am in close agreement with Dr. (C.'s) upper figure that 3.15 rads may increase the probability to 1 in 10. His reasoning would lead to figure of 31.5 rads increasing the risk by 100%. So Dr. (C.'s) upper figure indicates a more serious radiation risk than I am suggesting here.

"Now, if we use my 43.5 rems as the dose to increase the risk by 100%, then 20.7 rems would correspond to an increase in risk of $(20.7/43.5) \times (100)$, or a 47.5% increase in risk. Since the spontaneous risk is 100%, the radiation probability is $(47.5/147.5) \times (100)$, or that the probability is 32.2% that radiation caused Mr. (K.'s) lymphoma. Another way of stating it is that there is one chance in three that radiation caused Mr. (K.'s) lymphoma. This is not in the realm of speculation or possibility. A risk of one in three is to be regarded as quite a high probability. And I believe, for the reasons stated above, my estimate is quite conservative, and the true risk could be quite a bit higher.

"If the Government had even begun to approach the minimum standards of decency in monitoring persons they caused to be exposed to radiation, we would not have any of the uncertainties that are being discussed here. But the Government acted recklessly and irresponsibly in its monitoring obligation.

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"Given the fact that Mr. (K.) was put into a serious potential radiation environment, given that a fragmentary record shows that even in a small part of the time at least 3.15 rems was accumulated, given the fact that radiation does indeed induce lymphoma, this case should be adjudicated in Mr. (K.'s) favor on the basis of elemental fairness and justice to a veteran of the United States Service, wholly without the necessity of hassling the estimation of a dose that is absent only because of the irresponsible behavior of the US Government.

"Lastly, I must comment on Dr. (J.S.'s) statement in his letter of June 13, 1978 to the effect that:

"4. This is below the 5.000 Rem limit established by the Nuclear Regulatory Commission as the safe, annual, occupational exposure level for radiation workers, and

"5. Section 8.13, 'Appendix to Regulatory Guide' of the NRC, states that no clinical evidence of harm would be expected in an adult working within these levels (5000 millirems per year) for a lifetime.

"If Dr. (J.S.), on June 13, 1978, does not really know that both these statements are false, concerning the issue of safety, he is incompetent and should be removed from the payroll of the United States. There is no justification for any taxpayer paying for such incompetence in public servants. The Nuclear Regulatory Commission itself does not support such statements at this time."

Following additional procedural and other matters, the case was forwarded to the Board for appellate review. At the Board's request, the veteran obtained the records of his hospitalization and treatment at the B. Memorial Hospital and the University of I. Hospitals from 1973 to 1979. These materials included pathological samples. The claims folder and associated materials were then forwarded to the Armed Forces Institute of Pathology for further study. Prior to the Institute's study, however, the case was

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again reviewed by the Office of the Chief Medical Director of the Veterans Administration. The results of that review are set forth in the following memorandum:

"1. The VACO Director of the Nuclear Medicine Service reviewed the above files with Dr. (T.G.M.), Radiation physicist of the (J.H.) University Medical Institutions. There was complete consensus on the opinions and statements given below.

"2. On the basis of the records submitted, it is reiterated that insufficient scientific data are given to establish a cause and effect relationship between the lymphomatous disease of either of these veterans and his participation in nuclear device testings.

"3. Proper scientific evaluation of these veterans' claims can be made only when data, specific for these individuals, are supplied in categories such as:

- "a) the readings from cohort film badges and dosimeters of a given nuclear test
- b) scenario details for each test
- c) radiation physics and biophysics analyses of each test.
- d) soil radiation analysis following each test
- e) field radiation monitoring records for each test, including dust radiation analysis
- f) evidence of extent of neutron activation of elements in soil correlated with distances from ground zero

(Paragraph 4 is deleted as it pertains to a different claim.)

"5. While general application of the ALARA principle (As Low As Reasonably Achievable) results in lower radiation exposures, in practice, than those considered allowable by the NRC, nevertheless the NRC has not rescinded either its yearly or lifetime allowable occupational exposure levels.

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"6. In his June 1979 Task Force Report to Senator (G.)'s Committee, Mr. (P.L.), former General Counsel of HEW, commented that the Study Group found no reason to recommend deviation from the NRC annual allowable occupational exposure level of 5 REM.

"7...Veteran (K.'s) recorded exposure of 3.445 REM,...(is) well below the NRC allowable annual occupational exposure level of 5.000 REM."

After completion of this review, the case was sent to the Armed Forces Institute of Pathology for their review. The Institute's conclusions follow:

"1. It appears that the veteran served on active duty from July 1948 to May 1960 (approximately 12 years). He developed a "lymphoma" which was first diagnosed in June 1973 (approximately 13 years after discharge.)

"2. In addition, his service record demonstrates he was stationed on a small island in close proximity to a nuclear test area at Eniwetok from November 1957 to November 1958 (12 months) during which he participated in 22 atomic tests ranging from 0 to 9 megatons. The available dosimetry record shows a dosage of 3,445 millirems from April 10th to August 31st, 1958, (approximately four and a half months of this twelve month period.)

"3. The staff reviewed the submitted slides and sections prepared from the submitted blocks in this case. These were labeled 73-2737. Because of the rushed fixation the staff hesitates to make a more definitive diagnosis than malignant reticulo-endothelial process, diffuse. This is a broader classification which includes both leukemias and lymphomas. Indeed, this may prove to be a lymphocytic lymphoma of the poorly differentiated type or even a nodular follicular center cell type, however, because of the curious PAS activity which has a granular pattern in the cytoplasm in some of these cells and the equivocal changes on the Leder stains (naphthol-ASD chloracetate esterase reaction) the staff cannot absolutely exclude a subleukemic process. The major problem with these cells is that there is a marked karyorrhexis

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of the nuclei which suggests some degeneration of the tissue. Therefore, at this time with this submitted material, the staff hesitates to make a more definitive diagnosis than malignant reticuloendothelial process.

"4. The measured radiation dosage received by this veteran is at the lower end of the oncogenic range. However, dosimetry was available for only four and a half of twelve months of the tests, and reportedly did not accurately measure beta radiation. Therefore, it appears that the veteran's exposure was probably much greater than listed for the twenty two atomic blasts.

"5. In summary, the staff believes that the radiation exposure received in the Service was a probable factor in the etiology of this veteran's neoplastic process."

While the case was being reviewed by the Institute, the Board received a copy of a letter from the Defense Nuclear Agency to the veteran, responding to a variety of questions he had asked. Some essential conclusions of the letter were that, although badge readings were only available for a period of about four and a half months, the entire series of explosions took place during that period; that the badge reading of 3.445 rems was reasonably accurate; and that it was unlikely that the veteran had received any significant beta radiation exposure.

The case is now before the Board for final review.

THE LAW AND REGULATIONS

Service connection may be granted for disability resulting from disease or injury incurred in or aggravated by service. (38 U.S.C. 310, 331)

It is the defined and consistently applied policy of the Veterans Administration to administer the law under a broad interpretation, consistent, however, with the facts shown in every case. When, after careful consideration of all procurable and assembled data, a reasonable doubt arises regarding service origin, the degree of disability, or any other point, such doubt will be resolved in favor of the claimant. By reasonable doubt is meant one which

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exists by reason of the fact that the evidence does not satisfactorily prove or disprove the claim, yet a substantial doubt and one within the range of probability as distinguished from pure speculation or remote possibility. It is not a means of reconciling actual conflict or a contradiction in the evidence; the claimant is required to submit evidence sufficient to justify a belief in a fair and impartial mind that his claim is well-grounded. Mere suspicion or doubt as to the truth of any statement submitted, as distinguished from impeachment or contradiction by evidence or known facts, is not a justifiable basis for denying the application of the reasonable doubt doctrine if the entire, complete record otherwise warrants invoking this doctrine. The reasonable doubt doctrine is also applicable even in the absence of official records, particularly if the basic incident allegedly arose under combat, or similarly strenuous conditions, and is consistent with the probable results of such known hardships. (38 C.F.R. 3.102)

DISCUSSION AND EVALUATION

The issue before us involves the question of whether the veteran's malignant reticuloendothelial process, representing either a lymphoma or a leukemia, may be traced to his exposure to ionizing radiation in service. The Board has carefully reviewed the entire record, with due regard to the principle of resolving reasonable doubt in favor of the appellant's claim and the well-established policy of the Administration to administer the law under a broad and liberal interpretation, consistent with the facts in each individual case.

The veteran was not a temporary visitor, but a permanent resident of a small island located in relative proximity to the more than 20 nuclear explosions that occurred during his tour. Thus, he was constantly exposed to whatever radiation may have resulted from fallout, whether minimal or significant. The total extent of his exposure is indeterminate. Film badge readings may be reasonably accurate with respect to external gamma radiation at one location on the body, but there is no way to accurately measure the extent of exposure resulting from inhaled or ingested particles over the course of many months.

The experts whose opinions are of record propose various estimates of the probability that the veteran's malignancy was caused by his radiation exposure. These risk estimates range from 1 in 3 to 1 in 100. One expert assumed at the outset of his analysis that the recorded exposure of 3.445 rems was deficient by a factor of about 3, inasmuch as film badge readings were only available for a portion of the

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veteran's tour on Japtan Island. Recently received information, however, indicates that the entire series of explosions took place during that time for which badge readings are available. Accordingly, that expert's risk estimate should be reduced by the appropriate factor.

An assumption common to most of the opinions is that the veteran's malignancy is a lymphoma. According to the Armed Forces Institute of Pathology, however, it may actually be a leukemia. It is generally agreed that leukemia is more susceptible to radiogenesis than lymphoma. The exact degree of difference is unknown, but radiogenic leukemias would be expected to outnumber radiogenic lymphomas by, at the very least, about 4 to 1. Therefore, the various risk estimates should be increased by an appropriate factor.

Some stress has been placed on Federal standards concerning levels of occupational exposure to radiation over varying time periods. We do not find these standards relevant to a factual determination of the question of causation, as they were not propounded as absolute levels of safety, but as acceptable levels of risk.

We must interpret all the evidence in a manner consistent with the Federal regulations governing claims for veterans' benefits. In this case, the veteran need not show that radiation causation of his malignancy is more likely than not; he need only establish that the probability of such causation is significant, as opposed to remotely possible or merely speculative. The expert opinions of record do not dispute the possibility that radiation caused the veteran's disease; rather, it is the degree of probability that is in question. The experts' estimates of this probability vary from 1 in 100 to 1 in 3. And the Armed Forces Institute of Pathology states that radiation exposure was a "probable factor" in the etiology of this disease.

Human malignancies are thought to be the result of multiple interacting factors. We may never be able to determine with certainty what relationship, if any, the veteran's radiation exposure bore to his malignancy. But from a legal standpoint, the circumstances of his case raise a reasonable doubt that his exposure to radiation was, in our opinion, a probable factor in the development of his malignancy.

FINDINGS OF FACT

1. The veteran was exposed to an indeterminate amount of ionizing radiation in service while stationed in relative proximity to more than 20 nuclear explosions over several months in 1957 and 1958.

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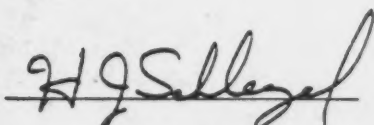
2. A malignant reticuloendothelial process was manifested in 1973.
3. The radiation exposure was a probable factor in the development of his malignancy.

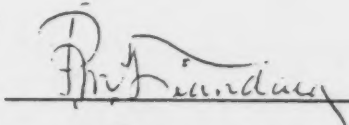
CONCLUSION OF LAW

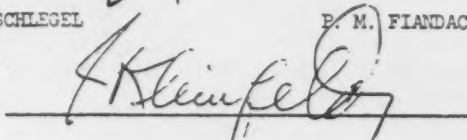
With resolution of reasonable doubt in favor of the veteran, the Board concludes that a malignant reticuloendothelial process is related to exposure to ionizing radiation in peacetime service. (38 U.S.C. 331; 38 C.F.R. 3.102)

DECISION

Entitlement to service connection for a malignant reticuloendothelial process is established. The benefit sought on appeal is allowed.


H. J. SCHLEGEL


P. M. FIANDACA, M. D.


I. KLEINFELD

The CHAIRMAN. I am interested in knowing what distinguishes the successful claims from the unsuccessful ones, especially inasmuch as there seems to be so much uncertainty in the 12 successful cases.

Mrs. BROUDY. I can tell you one of the reasons.

The CHAIRMAN. If you could put that in writing to us, tell us what you would like to say today, but I would like to have that as well, documented as you can document it for me. It is important that we have it in the near future.

Mr. SAFFER. May I say something, please?

The CHAIRMAN. Yes, sir.

Mr. SAFFER. I would like to respond to your question by relating to you my personal experience as a 22-year-old Marine Corps lieutenant when I was put in a trench 2 miles from ground zero while a 38-kiloton weapon was detonated to my front. I will not go through what I experienced during the actual detonation, but I can assure you that none of us were prepared for the effects.

I have since learned that the weapon exceeded its yield by a factor of some 25 percent. Even those who built it and detonated it did not know what the effects would be.

Now, I was wearing a film badge because I was at the test site in 1957 when all of us were issued film badges. I think it is a myth that I was exposed to harmless levels of radiation. I will relate to you why I maintain that.

Within 30 minutes after that blast, the Marine officer contingent of which I was a part, were taken within 300 yards of ground zero to what was called a postsite inspection, to inspect the damage which had been done by this nuclear monster which had been detonated at 6:30 in the morning.

We were not prepared for what we saw because we saw nothing but lifeless space, not even a rock. The whole desert had been burned to powder between where we were and ground zero.

Nor were we aware of the possible carcinogens to which we were being exposed. I know it was unsafe because after we had been there for about 5 minutes a field worker from the Atomic Energy Commission dressed in protective clothing with a hooded respirator came running up, pointing to an instrument he was carrying, and demanded that we leave the area.

Had the area been safe, I think we would have been allowed to stay there. My film badge did not record any of that activity. It recorded only the gamma radiation to which I was exposed. Therein lies one of the huge fallacies and big disparities of the film badge readings versus what we were truly exposed to. I think you are going to find this true of many atomic veterans. For the majority of atomic veterans there is no Veterans' Administration. The system doesn't work for us. If you evaluate those 12 claims that were approved, I think you'll conclude that only political pressure and public embarrassment of the VA led to the approval that probably took 6-7 years per claim.

The CHAIRMAN. I have no doubt about that. I think the Government will have to wake up in these matters. Of course, that is why this legislation is important—it can force them to wake up. I think they have been forced a long way toward awakening themselves just because of the hearings we have held.

Even the hearings have had a salutary effect. Frankly, I sincerely doubt that these 12 people would have been compensated without the hearings.

Mr. SAFFER. I believe that all such hearings assist us.

The CHAIRMAN. Thank you so much for appearing. We appreciate it.

Mrs. BROUDY. Thank you for inviting us. [Applause.]

The CHAIRMAN. Our next witness is Mr. Harry Tome, who is a delegate of the Navajo Tribal Council. He will testify on behalf of the uranium miners.

Mr. Tome, if you will come up with any of your associates who care to accompany you, we would be glad to have them.

Before you begin, I would like to clarify a point. When S. 1483 was introduced last July, it included a provision for compensating the uranium miners for radiation-related cancers. I thought at the time, and still feel, that special attention should be paid to the plight of miners who worked in the uranium mines at the beginning of the nuclear age without the benefit of proper protection against radon exposure.

However, as the committee began its work to refine S. 1483, it became clear that the circumstances of the uranium miners were sufficiently different from those of the fallout victims, that the legislation could not properly deal with both of them simultaneously. Consequently, we decided to devote this bill entirely to the fallout victims.

The uranium miners should have their own remedy. I am convinced of that. I am planning hearings on workers compensation issues at the beginning of next year. At that time I am hoping to contribute to a remedy to the problem of liability for cancer that is connected to work-related radiation exposure in the uranium mines.

In the meantime, as I said in my opening statement, I feel that the mechanism in S. 1483 establishes a good mechanism which may prove useful in judging the merits of uranium miners' claims inasmuch as uranium miners will also be able to use the radioepidemiological tables to determine the probability that their cancers have been radiation caused.

I am very interested in what you in particular think of the potential use of the probability of causation theory or legal approach for providing justice to uranium miners who have radiation-related cancers.

Mr. Tome, we are glad to have you here at this time. We will be happy to take your testimony.

STATEMENT OF HARRY TOME, DELEGATE TO THE NAVAJO TRIBAL COUNCIL, ACCOMPANIED BY LEO REDHOUSE, SAM JONES, PERRY CHARLEY, AND HAROLD TSO

Mr. TOME. Thank you, Senator Hatch. I am very pleased to take this opportunity to come here.

I would like to introduce the gentleman I am with. To my right here is Leo Redhouse. To my left we have Sam Jones. Then further to his left we have Perry Charley, and then to the far left is Harold

Tso, who is the director of the Environmental Protection Commission of the Navajo Tribe.

I represent the Navajo Tribe as its elected delegate in the New Mexico-Arizona area, not too far from the Four Corners area.

The CHAIRMAN. Yes.

Mr. TOME. There is an executive committee of the Navajo Tribal Council. I represent portions of Arizona, New Mexico, and Utah. Therefore, I am here in relation to the information that you have just talked about this morning. I do have a statement which I would like to submit for the record.

The CHAIRMAN. We will put your complete statement in the record following your oral presentation.

Mr. TOME. Thank you.

As you know, the Navajo Tribe back in the 1950's and 1960's had mining activities on the reservation, particularly in my area. We had many miners who worked in these uranium mines. They lived in the radiation area.

In one particular area—and Mr. Charley can verify this—about 20 uranium miners died from this particular radiation. We do know 14 were caused by being exposed to uranium radiation. The rest we cannot verify, but we definitely feel it came from that. In our Navajo tribal customs with our traditional ways, we do not believe in autopsy after one dies. It is one of our Indian ways, and we do not want to bother it. Therefore, the only evidence on the information we can get is from the doctors who examined them while they were alive.

These are some of the things we had problems with. Throughout the reservation we have many Navajos who worked in Colorado, New Mexico, and even Arizona, and we had many problems.

At this time, maybe these two gentlemen who are here can give their testimony.

Also, I would like to say that your bill deals mostly with Utah and Nevada, but, as you can see, the Navajo Tribe, the people who dealt with the uranium, were also being exposed just like the gentleman or the lady who spoke just a while ago. These miners were exposed to these when they mined the uranium and took it to the mill. They worked at the mill and hauled the uranium. They have been exposed, and they were in the same situation as these other people who were exposed when the A-bomb was being experimented.

At this time, with your permission, I would like to turn to Mr. Redhouse.

The CHAIRMAN. Thank you.

Please proceed, Mr. Redhouse.

Mr. REDHOUSE. I am Leo Redhouse, from Teec Nos Pos, Ariz.

I come here because this is a uranium miner exposure hearing. I don't talk very good English but this is what I remember.

The CHAIRMAN. You are doing just fine. You are doing fine.

Mr. REDHOUSE. I have medical statements from the doctor. I got a notice that I have uranium trouble in my lungs. I had an examination 2 years ago. My body was X-rayed and all that. I have some kind of disease, you know. I had these uranium problems.

I tried to get this up as soon as I went with these other people who talked about radiation. It is just about the same thing as the uranium. That is why I am coming here.

I have a family, granddaughters, and all of them with me. I need a little help which could be funded from Washington or the Government.

Mr. TOME. That is the extent of his statement. May we submit his written statement for the record?

The CHAIRMAN. Thank you, Mr. Redhouse. Yes, Mr. Tome. We will accept and include Mr. Redhouse's statement in the record.

[The prepared statement of Mr. Redhouse follows:]

STATEMENT OF LEO REDHOUSE, SR.
TeecNosPos, Arizona

My name is Leo Redhouse, Sr., I am 71 years old and a full blooded Navajo. I have lived at TeecNosPos, Arizona all my life. It is a small community, seven (7) miles south of the Four Corners Monument in northeastern Arizona. I have a large family consisting of nine (9) children, three (3) boys and six (6) girls. A daughter is still dependant of me, as well as a grand daughter.

I worked in the uranium mines for about ten (10) years in VCA and Climax Mines on the reservation, and small leased uranium mines in the Colorado Plateau, a place called Egnar, Colorado. I only worked here one (1) week because of the intense smoke that accumulated inside the mines. I was experiencing severe headaches and severe shortness of breath, so I resigned.

I left the uranium mines mainly because of lack of work after ten (10) years of mining. The mines I worked were all unsafe, with very little ventilation, frequent cave-ins, no safety precautions taken, no safety apparatus worn with the exception of helmets, which we had to furnish ourselves. A lot of times, we had to brace the ceilings of the mines, but still cave-ins were frequent. We were told to go back into the mines 5-10 minutes after each dynamite blast. We handled and hauled out these ores mainly by hand, pick and shovels. This was hard manual labor with bi-weekly payments of \$46.00 - \$50.00. No fringe benefits were available. As far as I recall, we never had a safety meeting. We wore the same clothes to work and home with no showers available.

Currently, I experience frequent severe and long-lasting colds with sore throats. The Indian Health Service doctors tell me I have moderate lung impairment called silicosis. I have shortness of breathes. During severe coughing spells and getting up abruptly from bed, I get dizzy. I have dry coughs and some pain in my chest area. I am not on any medication for these. In October, 1956, I lost 100% of my left vision because of dynamite cap blast that was apparantly thrown into some bushes. We were cold and decided to build a fire for warmth, not knowing the cap was thrown there. I was thrown about ten (10) feet into a rock pile, losing conscious. I was taken to three (3) hospitals for surgery. I was re-compensated for the lost of my vision only two (2) years.

I worked with about fifty (50) people. Many of these are dead now, most probably from lung cancer or diseases. Those still living complain of severe breathing problems, some under the doctor's care for these problems. I feel some of these do not want to go to the hospitals, being afraid that they will be told their problems are from uranium.

The US Government and mining companies never told us of the dangers of exposure to uranium dust of radiation. If they had forewarned us, we would not have been living with these lung diseases. Because of their neglect in never warning us, allowing us to eat and drink our meals inside these mines, we ought to compensated for our hardships and health problems.

Mr. Senator, I appeal to you for assistance on these vital issues of compensation for uranium miners and victims of atomic blasts. Thank you for your time.

Mr. TOME. We have Mr. Sam Jones here. He is also a miner. He also has a health problem related to uranium mining.

One thing I would say, Senator, is this: I have known many of these miners in my community, young people about my age. The only job they have is working in the mines. They work side by side to try to support their families. Now they are being buried side by side because of this uranium problem that they have.

Next is Sam Jones.

The CHAIRMAN. Mr. Jones, we are happy to have you with us, too. Would you like to make a statement?

STATEMENT OF SAM JONES, AS READ BY PERRY CHARLEY

Mr. CHARLEY. I will read the statement of Mr. Jones because he does not understand English.

The CHAIRMAN. That will be fine.

Mr. CHARLEY. He has prepared a statement.

My name is Sam B. Jones. I am a Navajo Indian. I am 53 years old and live at Aneth in the southern portion of Utah. I have two dependents, a 6-year-old son and a 13-year-old son.

I started working in the uranium mines in August of 1956 at Dove Creek, Colo. I worked for various small mining companies for a period of 14 months. I started working for Union Carbide at Egnar, Colo., on June 25, 1959. I worked here for 21 years and was medically laid off on November 13 of 1979.

I left the uranium mine when Dr. Leon Gottlieb of Shiprock PHS Hospital refrained me from engaging in any further mining activities. I was told that I have category III silicosis and was totally disabled. Prior to this, I was experiencing severe shortness of breath, pains in my back, pains in the upper chest area, and pains and aches in the right lower leg frequently when I was still actively mining. I was seen once a year by the company doctor, Dr. Gorman of Monticello, Utah. He never indicated to me or told me I had a severe lung impairment. I was never told to stop mining. Only when Dr. Gottlieb of Shiprock found that I had this severely disabling lung disease was I told to stop mining.

He goes on to say:

The mining company had us wear safety apparatus like safety glasses and helmets. A lot of these safety precautions were lenient. We had safety meetings bi-weekly for about 30 minutes, but they never told us the effects of uranium radiation and inhaling of radioactive dust. After dynamite blasting, the mines were choked with dust. We had to set up the ventilation equipment ourselves. We ate our lunches down in improvised so-called lunch rooms inside the mines to save time. Drinking water was made available to us inside the mines. Smoke was intense from mining machineries.

I presently have severe shortness of breath with frequent dizzy spells and fainting spells. I get tired easily even when just walking. I don't do any labor. I also have constant back pain, aches and pains in my knees and joints. I am on medication for these pains and have checkups every 2½ months on my lung impairment. The doctor also told me that my right heart or my right ventricle is enlarged because of my lung impairment.

I worked with about 50 miners when I was working. About half these men now are sick and have severe lung diseases or lung cancer. I know personally that two of my friends have lung cancer. One has leukemia. We often were sick and had colds when we were mining. We were so sick sometimes that we were unable to work. Only then were we released from our duties.

I thank you, the chairman of the committee, for the opportunity to express my feelings.

He asks the Committee on Labor and Human Resources and you, Mr. Chairman, to help us in any way possible to get us compensation that we so greatly need, just as the two young ladies expressed here on their experiences with the Nevada test site victims.

Thank you very much.

The CHAIRMAN. Thank you, Mr. Jones. Thank you, Mr. Charley, for reading that.

Mr. Tome?

Mr. TOME. I believe Mr. Harold Tso can summarize some of the things which we have overlooked.

The CHAIRMAN. Very well. We are happy to have you with us as well.

Mr. Tso. Good morning, Mr. Senator. Thank you for the opportunity to make a few other comments.

These miners, Senator, represent only a small portion of many of the former miners. They come from a belt near the Four Corners area west to about Lake Powell, Utah, an area that is commonly referred to as Monument Valley, Utah and thence southward to Cameron, Ariz. There are about nine major areas within Navajo country in which uranium mining took place.

We made several attempts to identify this particular population to see what kind of radiological-related problems there are and to see what kinds of needs require resolution. Because funding is lacking for this particular problem area, we were able to look at only 16 miners. Mr. Tome has that particular information in his statement.

One of the things that we are being asked about by these people who have worked in the uranium mines is what about those who have worked in the uranium mills. Your scientist, Dr. Merrill Eisenberg, in the second edition of Environmental Radioactivity, said that in 1944, in the Oak Ridge plants where uranium hexafluoride was being processed, there was evidence that U_3O_8 dust was escaping from the plants and that worker populations were being exposed to this uranium dust.

Mindful of that particular piece of evidence in 1944 and the fact that in 1976 we discovered an estimated \$100,000 of U_3O_8 dust on the roof of the Shiprock, N. Mex., inactive mill building, the people who worked in the mills are asking, What about us?

There are others, Mr. Senator, who worked in the mines part time and who loaded the uranium ore into their trucks. They then hauled the ore to the uranium mills in Utah, southwest Colorado, and to Grants, N. Mex. They are asking whether this bill should include them as well.

We are mindful that in the 96th Congress Senate bill 1827, sponsored by Senator Domenici, and your own bill, Senate bill 1865, were a continuation of your efforts to take care of this problem.

When the Labor and Human Resources Committee held a hearing in Washington, which Senator Metzenbaum chaired, we submitted comments for the record. We asked committee staff and I believe one of your personal staff, whether that record would be used in pursuing S. 1483 and compensation for uranium miners. We were assured that that record would be used.

The other things which deal with compensation are, I believe, in reference to Senate bill 1865, when you talk about the miners, or in the case of the Navajo uranium miners, I think the committee should bear in mind what you mean by heirs and survivors, simply because in the Navajo way of life the normal family boundary lines extend far beyond what we normally consider as family.

The Navajo way of life is a system of clans. These clans have interrelationships. In many cases it is difficult to distinguish the blood relatives from the clan relatives. Therefore, in defining who the beneficiaries of uranium miners are, the committee should bear this in mind as it considers heirs and survivors.

The CHAIRMAN. That is a good point. This is a good legal point.

Mr. Tso. Another item we were anxious to express to you is that these problems would never have happened if the people who were responsible for monitoring the uranium mines and the uranium industry had been zealous in their work. This zealousness, as the Navajo record seems to indicate, amounted to coming in every 3 months or so and examining the mines for dust, other gases, and radioactivity levels in the air. In other words, the record seems to indicate that this happened infrequently. There was not a routine monitoring program. The States at that time were still getting their programs started and trying to become established in this particular expertise. There did not appear to be any relief nor expertise exercised by appropriate authorities to resolve abnormal findings.

Only in recent years have the mines been required to vent their atmospheres, bring in fresh air and expel the used air. This is being accomplished as a result of a regulated monitoring program.

With respect to your earlier remark about the probability of causation, we just received this information late last week and have undertaken a study of it. It looks like a basis on which to begin thinking and developing additional comments. I would like to reserve that until we have had more opportunity to study the subject in depth. However, it does sound like a reasonable point, a starting point in defining what a cause and the probability is.

I have no other comments, Mr. Senator.

The CHAIRMAN. Thank you. It does establish a new rule of law in these cases. That is a very important and moderate rule of law.

Mr. Tome, we want to thank you and your associates for being with us.

I would like to submit written questions to you and would like you to answer them for the record at your earliest convenience. Would you do that for us?

Mr. TOME. We certainly will, Senator.

The CHAIRMAN. Thank you so much. We are delighted to have all of you here. We appreciate your coming.

Mr. CHARLEY. Senator Hatch, I have a statement I made. I would like to respectfully request that it be included in the record.

The CHAIRMAN. Without objection, it will be included in full in the record.

Mr. CHARLEY. Also, I would like to make a small addition.

My father is right across the street. He is very sick now. He worked in the uranium mines for 15 years, but lately he has been experiencing more and more problems. Consequently, he could not make it here. However, I have his statement and I would like for it to be included in the record.

The CHAIRMAN. We will include that in the record also, without objection.

Mr. CHARLEY. Thank you, sir.

The CHAIRMAN. Thank you for coming. We appreciate all your efforts in being with us. [Applause.]

[The prepared statements of Mr. Tome, Mr. Perry Charley, and Mr. Harris Charley follow:]

STATEMENT OF COUNCILMAN HARRY TOME
DELEGATE TO THE NAVAJO TRIBAL COUNCIL
NAVAJO NATION, WINDOW ROCK, ARIZONA

Good Morning Mr. Chairman and Committee Members:

My name is Harry Tome. I am an elected Delegate to the Navajo Tribal Council of the Navajo Tribe. I am also a member of the Navajo Environmental Protection Commission. I normally represent the Red Valley Chapter of the Navajo Tribe. This chapter is located in Northwestern New Mexico near the Four Corners area.

However, in more than seven years of service to my people as a Council Delegate and as a Commission member, I have often had to examine issues on a regional level rather than in terms of a local or individual level. Because of this, I am today speaking on behalf of Navajos who worked in the early uranium mines. These former miners are now suffering from or are beginning to show adverse effects of working in uranium mines.

Mr. Chairman and Committee Members, may I take this moment to introduce several of the former Navajo miners who accompanied me here today? This gentlemen is Mr. Harris Charley from Beclabito, New Mexico. Seated next to him is Mr. Leo Redhouse from Teec Nos Pos, Arizona. Next to him is Mr. Sam Jones from Aneth, Utah. We also have Mr. Perry Charley who is employed in our Tribal Community Health Representative Program. He will assist us with translations, in case you have any questions to ask of these former miners. We will all be submitting statements for the record, Mr. Chairman.

There are others who should be here, Mr. Chairman, but because of distance and health, we could not bring them. Some of these miners have already died and left behind dependent wives and children or because of failing health they could not be brought here.

Mr. Chairman and Committee Members, we are glad that you desire to move S. 1483 forward for Senate and Congressional action. We pray that S. 1483 will succeed where S. 1865 and S. 1827 failed in the previous Congress.

We have heard that part of S. 1483 concerns uranium miners who have been unnecessarily exposed to mine dusts, radon and other gases as well as uranium and its radioactive products. The other part of S. 1483, we understand, is for people and animals unnecessarily exposed to radiation or radioactive dust clouds from the Nevada Test Site when the United States Government was testing its A-bombs out in the open. I am very pleased that former uranium miners are also included in S. 1483. In addition, Mr. Chairman should individuals who worked in the uranium mills or those people who loaded uranium ore and hauled it to the mills also be included?

Several workers from our Community Health Representative Program have, at the very active urging of the people living near mined areas, completed a small survey regarding the miners. We had originally hoped to complete

this survey for three Navajos in order to give you a better idea about the widespread nature of this problem. However, those plans have had to be substantially modified because of lack of funding. Instead, we are only able to bring you information concerning sixteen (16) miners. I know that the people from my area are very willing to discuss this matter openly, for they have suffered the health consequences of uranium miners for some time now.

I would like to summarize the survey now.

The sixteen miners that participated in the survey were relatively young. Their average age was approximately 54.4 years and they support, on the average, four persons. The income level, if you take out the income level of one person, was an average of \$5,184 annually.

Two of the miners worked less than six years. One of them now suffers from major illness. The fourteen remaining miners worked an average number of 15 years. Many worked 22 or 23 years in different mines. Of these fourteen miners, thirteen now suffer from serious medical problems.

Unfortunately, only 3 or 4 have any kind of medical insurance. As you might be able to guess by the average age, many cannot collect Social Security benefits.

The problems these miners face at this point in their lives is tremendous. For the most part they have little or no income, yet many are in their middle or late forties with families to support.

Some of the family members of the miners, too have developed serious long-term illnesses. Also, one miner's wife delivered a baby that was stillborn. This happened to her on three different occasions.

We have not been able to obtain clearcut information on just when the mines began or ceased their operations on Navajo Tribal land. We believe it was during the late 1940's to about the mid-1960's. Because our people were not advised of radiation protection practices, mining companies were not venting mine atmospheres and radiation monitoring was infrequently performed, we are now living with the consequences.

As sad as the situation is, there are some things that can be done to provide relief for former Navajo and other uranium miners.

1. We need to know more about the miners. No one seems to know just how many miners are affected or how serious their problems are. We know that at least nine (9) areas of Navajo country were impacted by uranium mining. These former miners with me today represent three of those areas. Our survey represents only a small fraction of the entire problem. Funds should be identified so that we can determine the nature and extent of uranium mining impacts for S. 1483.

2. Social Security benefits should be re-examined. As I said the life expectancy of Navajos is low. I

believe it is now 58 years. The life expectancy of Navajo miners I am sure is less than that. I realize that you are here as part of your concern for the elderly, but I emphasize Navajos generally and Navajo miners particularly, are not living long enough to become old or to qualify for Social Security benefits. Those that survive are often not eligible for Social Security benefits even though they may have worked for 20 years or more, or if they are eligible as a result of their age, they do not receive very much to support their families. Without Social Security benefits, they cannot receive Medicare and Medicaid. The high cost of medical treatment for afflicted miners does not allow them to support their families. Medical treatment facilities should be located near former Navajo miners so that distances and opportunity do not prevent miners from getting health care.

3. Our former Navajo miners know that they are not the only ones affected this way by uranium mining. We have heard that people in Grants, New Mexico area and southern Colorado have similar problems. S. 1483 should state which members of a miner's family are considered as his heirs and survivors. Navajo families traditionally extend beyond those normally accepted as family members. For S. 1483, miners who are not compensated or who are insufficiently compensated

cannot appeal the judge's decision. How can the miners appeal? What about costs for the appeal? In addition, an Advisory Panel makes recommendations on compensation. If new information shows that the recommendation is incorrect, how will this be handled?

4. This relates to the other recommendations. Funds should be provided to local hospitals to treat these complicated illnesses. Our people sometimes travel up to 150 miles just to be examined at a clinic.

I want to thank you for your concern and response to our desire to take care of those who cannot help themselves and especially those who were unnecessarily exposed to radiation.

We are willing to work with you and your staff to support your efforts. Many of us cannot write but, we will still do what we can.

I also want to thank you and your committee staff for your kindness in keeping us informed. It shows that you are concerned about us. Please feel free to call upon me or members of my community if there is anything we can do to assist you.

Mr. Chairman and Committee Members, we are prepared to answer any questions that you may have for us.

STATEMENT OF PERRY H. CHARLEY

08 April 1982

Mr. Chairman, members of the Committee on Labor and Human Resources, I am honored to have this opportunity to express my feelings and experiences before you and the Committee today on the subject of S. 1483, Radiation Exposure Compensation Act. I will focus on the health issues as they relate to the Navajo Uranium Miners. I was born and raised on the Navajo Reservation, in a small community called Beclabito, New Mexico.

I got involved with my people's problem with uranium radiation exposure four (4) years ago (1978), a year after my employment with the Division of Health Improvement Services under the Navajo Tribe. I was alerted to the fact that significant numbers of Navajo miners had severe disabling lung diseases and lung cancers. For a long time, I was aware that my father, Harris Charley, was suffering a disabling lung disease called silicosis. Through my work experiences as a health worker and close association with medical professionals, I have become aware of the Navajo Uranium Miners' plight.

The Shiprock Agency, covering 5,000 square miles with a population of about 30,800 people, is the largest of five (5) agencies within the Navajo reservation. There are nineteen (19) communities or chapters within Shiprock Agency. Nine (9) of these nineteen (19) chapters have had prior mining activities in the 1950's to 1960's. In the midst of the town of Shiprock is located seventy-two (72) acres of abandoned mill tailings, formerly operated by Kerr McGee Oil Industries, Inc. and Vanadium Corporation of America and its successor Foote Minerals Company, posing considerable dangers to the residents of Shiprock. Left behind also in these communities are contaminated water sources, abandoned waste piles emitting low-level radiation, abandoned mines with no danger signs and with easy accessibilities to local residents, plus numerous problems relating to Uranium Radiation Exposure.

I have seen and felt my people's anguish. I have seen them gradually decline in health and have seen them dying or die.

I personally know of twenty (20) deaths definitely associated with Uranium Mining; fourteen (14) lung cancer, five (5) respiratory failures and one (1) with other type of cancer. In addition to this in ten (10) other deaths, no cause of death was given but these had documented clinical and radiological evidence of lung diseases. We have documented that 50% of the miners examined, who are living within Shiprock Agency have clinical and radiological evidence of chronic lung disease. In addition, 2 to 3 new incidences of lung cancers are being diagnosed yearly. Currently, four (4) miners are alive with lung cancer. Three (3) have metastasis of cancer to other body parts, one (1) is clinically stabilized.

Because of lack of funds, we are unable to provide specialized pulmonary care that these Navajo miners deserve. No registry of all the miners on the reservation or even Shiprock Agency exists today because of lack of funds also. If fundings were appropriated, we could give you a better idea of all the problems facing the Navajo Miners.

I look to you, Mr. Chairman, and to the experts on your committee to assist the Navajo Uranium Miners. I extend my appreciation to you and the Committee for your support and for taking the time to hear our concerns.

STATEMENT OF HARRIS CHARLEY

08 April, 1982

My name is Mr. Harris Charley, I am 62 years of age. I live at Beclabito, New Mexico, a small community 15 miles south of the Four Corners National Monument. I have a large family, consisting of six (6) sons, three (3) daughters and eleven (11) grandchildren plus my wife, Sarah. Three (3) are still dependant of me.

I worked in the Uranium Mines for fifteen (15) years, starting in February, 1940 and ending August, 1964 due to declining health problems from working these mines. I was told to stop after the Company doctor found some spots on my lungs. 1940 - 1963, was spent in Uranium Mines plus other forms of employment. I served 1½ years, 1942 - 1943, in the U.S. Navy. 1943 - 1964, I was employed full time as a uranium miner with lay-offs and leaves due to illnesses.

When we first started working in the mines, nobody told us uranium radiation and inhaling radioactive dust was dangerous. We were literally forced to work as slaves at hard labor. The mining companies and officials were only concerned of shipping out large quantities of ore and making a big profit.

Consequently, the conditions inside the mines were extremely poor and unsafe. The mines were full of dust, especially after each dynamite blast. We had to go back into the mines thirty (30) minutes after each blast. There were no ventilations in the mines. Very little safety measures were enforced. Yes, we had safety helmets, shoes and gloves but no other protective clothing and apparatus, such as face mask, safety glasses, were provided. We wore the same clothing to work, during work and back home. We worked nine (9) to ten (10) hours a day for meager wages. This included our lunch breaks we had in the mines. We drank the seemingly clear, cool running waters in the mines. I worked as a machine operator (monkey machine) as a driller, as a hoist man and as a forman. I worked for VCA Mining Company, Climax Mining Company, Union Carbide, Flanderson Mining Company plus several other small companies that were leased. These were all in the Colorado Plateau as well as one (1) year on the Navajo Reservation, Carrizo Mountain, for Climax Mining Company.

STATEMENT OF HARRIS CHARLEY
APRIL, 1982
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These mines were rarely inspected, about once every six (6) months. When the mine inspectors were expected, the worst areas were cleaned up and we were told to avoid these areas. Often the areas deep in the mines, some about two (2) miles were left virtually uninspected.

The air was very low, deep dust and lights available only from carbide lights affixed atop our helmets. We had a lot of accidents such as falls, cave-ins, serious mutilations and loss of fingers and toes. One of my brother was seriously hurt in such a cave-in at Green River, Utah. I dragged him to safety. To this day, he still suffers from this. His right foot was crushed and he has silicosis, too.

Today, I have a serious lung impairment called silicosis. A lot of my former friends are dead now because of lung cancer or lung disease. They died at an early age. I have severe shortness of breaths especially when doing light work or going into an enclosed room. I have aches and pains over my body, my knees and ankles gets swollen often. I do not sleep much at night. It feels as if my breathing will be cut off or my heart will stop. I know this is because of the radiation from the uranium. My health has been steadily declining now for the past ten (10) years. I have been to four (4) off-reservation hospitals many times, as well as the PHS Indian Hospital in Shiprock, New Mexico. Since March, 1979, I have been experiencing more problems with my health, mainly breathing. I get dizzy and sick more often. The doctors tell me there's nothing wrong, only to take care of myself.

We had a good doctor here at Shiprock for several years. Dr. Leon Gottlieb was concerned for our health. He understood our needs and problems. He was good friend of the Navajos and treated us as an individual. We do not understand why he left. They tell us because of lack of funds. I think its because of politics. All I know is we need more doctors like him to help us.

I feel that this thing called radiation has not effected only me as some of my children and grandchildren have had health problems since birth. I heard that radiation can effect future generations. I am afraid for my children and grand-

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children's future children now. I do not want anything to happen to them. Because of my health, most of my children never had the necessities of life, such as better education, good clothing and so forth. My only income is about \$300.00 per month, disability check from Social Security.

The Navajo uranium miners were treated like dogs in the mines, with no regards for their health and safety. We were done a great wrong and we are suffering because of this. A lot of my friends and co-workers are gone now - dead from lung cancer and lung diseases long before their time.

We are the forgotten "SILENT SOLDIERS" of the early nuclear age. They say uranium was used for weapons - bombs. We helped win a war but we are forgotten and we are suffering because the mining companies and the U.S. Government treated us like dogs.

Mr. Chairman, I appeal to you and the Committee to help us get fair compensation, though it will never atone for our sufferings, and good medical care and medical providers - for the sake of humanity. Thank you.

The CHAIRMAN. Our last witness today is Dr. Charles Mays, of the University of Utah. Dr. Mays is a member of the division of radiobiology which has provided me and my staff with indispensable assistance during the formulation of this legislation.

Welcome, Dr. Mays. We are really happy to have you with us. We will look forward to taking your testimony at this time.

STATEMENT OF CHARLES W. MAYS, RESEARCH PROFESSOR OF PHARMACOLOGY, RADIOBIOLOGY DIVISION, DEPARTMENT OF PHARMACOLOGY, UNIVERSITY OF UTAH SCHOOL OF MEDICINE

Dr. MAYS. Thank you very much, Senator Hatch.

I have been working in this field for the last 27 years. I was a member of the BEIR committee that made the risk estimates you have used. I am a member of the Committee on Internal Dose of the International Commission on Radiological Protection [ICRP].

I like the concept of attributable risk. In fact, I came up with essentially the same concept in 1964. I put this out as a lecture handout to my students. I see one of them named Bruce Church who happens to be in the room here. Therefore, I would like to have that short lecture handout appended to the record for historical purposes.

The CHAIRMAN. Without objection, we will put that in the record as an appendage to your comments here today.

Dr. MAYS. I would like to talk about some details that I hope will help you to strengthen your bill and to make it fairer in the sense that it will increase the chance that people whose cancers were most likely caused by radiation can, indeed, be compensated. I would like to talk about four different items.

If you want to interrupt me, it is fine, because I go into greater detail in my written testimony.

The CHAIRMAN. Without objection, we will put your complete testimony in the record immediately following your oral presentation.

Dr. MAYS. Thank you.

First, it is very important that you set up in your bill a medical board of qualified experts to rule on two things. One would be the cancer diagnosis to make sure that, in fact, it really is cancer and second, to rule on the degree of severity.

I would like to talk about the degree of severity. As I understand from an earlier version of the bill—and it may be changed now—it was to compensate all cancers independently of their severity. If there were only a few cancers, this perhaps would be an acceptable solution, certainly a simple one. However, when there are a large number of people who have cancer and are seeking compensation, I think one has to differentiate between the most serious and the less serious.

One could prescribe degrees of severity, ranging from zero up to 1, assigning the highest value of 1 to those cancers that were the cause of death. This could be uniform for all fatal cancers and would avoid judging which particular type of cancer-caused death was the worst.

On the other hand, there are some cancers that present no clinical problems and in some cases are diagnosed only at the time of

autopsy. In this case, I think it would be appropriate to assign a severity of zero and not compensate them.

Through my remarks I will emphasize thyroid cancer. In fact, it was my testimony on the possible risk from fallout-induced thyroid cancer before the Joint Committee on Atomic Energy some 19 years ago, that led Senator Wallace Bennett of Utah to encourage the U.S. Public Health Service to start their study of thyroid cancer throughout southern Utah. Therefore, I am very much interested in thyroid cancer.

I know Seymour Jablon. In fact, I had very good discussions with him and Victor Bond for the past 2 days on the concept of attributable risk.

The CHAIRMAN. They have been very helpful, both of them.

Dr. MAYS. I am told by Dr. Frank Tyler, an international expert on thyroid diseases here at the University of Utah Medical Center, that during routine autopsies, if the thyroid gland is sequentially sectioned completely throughout its volume, one can expect to find occult thyroid carcinomas in 20 to 30 percent of the cases.

I think you should be aware that if a bill were passed that provided compensation for occult thyroid cancers, which have no clinical significance, the main thing it would do would be to encourage people to have their thyroid sectioned completely at time of autopsy, so that their survivors would be able to reap a large compensation.

The second thing I would like to talk about is radiation dose. I understand that some people feel that they were being used as guinea pigs in a medical radiobiological experiment. However, if this were really the case, wouldn't the ones designing the experiment have measured the doses much better? I think it is the lack of reliable dose information that will give you more trouble than anything else in this compensation bill.

At the present time, some information has been published by the AEC and by the offsite monitoring of the Public Health Service on the external gamma ray doses. Their number come out fairly low.

The CHAIRMAN. Let me interrupt you for a second. We have just recently received some Department of Energy studies where they claim by looking at the soil samples of 1979, and by studying, among other things, the cesium percentage, and so forth, that they can make a determination that the doses were relatively light.

Do you really believe that?

Dr. MAYS. I know—

The CHAIRMAN. Twenty to thirty years later?

Dr. MAYS. It is possible their doses might be approximately valid. They are using special techniques of looking at the isotopic ratio between plutonium-239 and plutonium-240.

The CHAIRMAN. Right.

Dr. MAYS. When a nuclear explosion occurs, the ratio of the plutonium isotopes depends on whether the yield is megaton sized or smaller.

On the other hand, it is an indirect method. I would suggest to the committee that before you use their numbers as a basis for compensation, or what may actually turn out to be the lack of compensation, that you try to get some independent verifications of their numbers using a different technique.

The CHAIRMAN. My attitude is that it is a little late to be very accurate, even using those methods.

Dr. MAYS. It may be that the method is accurate.

The CHAIRMAN. You think it could be?

Dr. MAYS. We built a total body counter here at the University of Utah in 1957, 25 years ago. One of the things I wanted to do was to measure the levels of radioactive cesium-237 in residents of St. George.

At that time—it was 4 years after Shot Harry—I measured some entering freshmen coming straight up at the start of the fall quarter from St. George, before their body burdens could change appreciably either by different dietary intake or by natural elimination.

I found that on the average the cesium concentrations in these people from St. George were lower than those in persons from Salt Lake City.

The CHAIRMAN. What significance would that have?

Dr. MAYS. The significance was, as I now understand it, that cesium tends to be bound very tightly to clay when it reaches the soil and to become biologically unavailable. Therefore, most of the cesium going into the food chain results from direct deposition on vegetation. Even though the intake of cesium by the people in southern Utah could have been increased by Shot Harry, this increase would have been eliminated from their bodies because of the 4 years that had elapsed.

The CHAIRMAN. Therefore, the fact that we are measuring it today in the soil does not mean they did not have high intake at that time through fruits, vegetables, milk, et cetera?

Dr. MAYS. That is right. It is an open question. But there is a way one could answer it.

The CHAIRMAN. It is not only an open question, but it is a probability based upon the testimony that we have had through these seven hearings on this matter.

Dr. MAYS. One of the things that we would like to do—

The CHAIRMAN. Wouldn't you agree with that?

Dr. MAYS. Yes.

The CHAIRMAN. It is a probability that these people suffered high doses down there even though it may not show up in the soil content today?

Dr. MAYS. If you could obtain tissue from St. George people who had died shortly before and shortly after Shot Harry, the increase in the cesium concentration in the tissues could indicate the amount of intake from that specific shot.

The CHAIRMAN. However, based upon the testimony we have had about the dust and the high radioactive content, the Geiger counters, and all the other testimony we have had, it is a probability that it was much higher than these present tests would indicate just by merely checking cesium in the soil?

Dr. MAYS. I am not really sure of that, Senator. In all honesty, my sympathies are very much with people who have had cancer. My own father, who lived here in Utah in the early 1950's died of cancer. Certainly, anyone who has cancer has my sympathy. However, just because a person has cancer, it does not necessarily mean that the cancer was caused by radiation.

The CHAIRMAN. You do have the other added factor of the tremendous unevenness of the distribution. You could be 10 feet away and another person have a tremendous dose and you have a relatively small dose. That is a true phenomenon, isn't it?

Dr. MAYS. Yes, the so-called hot spot phenomenon.

The CHAIRMAN. What I am trying to say is, from a dirt sample standpoint, that does not really prove one thing or the other, other than there may be more cesium up here than there was down there.

Dr. MAYS. We are developing a technique—Dr. Ed Haskell, who happens to be in the audience, is the team leader on this—to enable us to evaluate what the local doses were in people's homes. Thereby we can assess local doses to individuals if we can make this technique work.

It is a technique using the stored signals of radiation in quartz crystals of brick. When the brick is fired in the kiln, the high temperature erases its previous memory of radiation events. Then the more radiation the quartz crystals receive, the higher signal they store. Haskell has a technique to measure how much radiation a brick has received.

This would allow us to address the very important question you raised, Senator, of the hot spots. Just because you have two houses on the same block, it does not necessarily mean they receive the same radiation doses.

The CHAIRMAN. That is why these studies at the University of Utah are going to be extremely important. That is one reason.

Dr. MAYS. Yes. I wish Congressman Marriott were here. He was asking some very sincere questions on whether to wait for more studies.

[Talking in the audience.]

The CHAIRMAN. I wonder whether we can have more order here. Let's have order in the room so that we can all hear.

Dr. MAYS. There is a general distrust among many people concerning the dosage numbers published by the Government. I would hope the numbers we can produce at the University would be regarded as accurate and not subject to bias either way, either to make them deliberately higher or deliberately lower.

The CHAIRMAN. That is what we hope also. We think it is important that the studies be conducted outside of the Government, at the University of Utah, where I have total confidence in objective verification being done by objective scientists.

Frankly, there has been a lot of work already done which indicates the justification for this bill.

I think what Congressman Marriott meant by his comment is that we have a lot of studies right now. We have a lot of data, a lot of information, a number of hearings. We may need a couple of more hearings here.

Dr. MAYS. It might be.

The CHAIRMAN. This process never seems to end.

Dr. MAYS. If you use the numbers, these recent numbers you have mentioned by Harold Beck and Philip Krey, essentially what it would mean is that most of the exposures attributed to external radiation would probably be thrown out and the cancers which would be compensated would be primarily the thyroid cancers.

The CHAIRMAN. I see. Again, it becomes important to get the studies which I have been talking about, done at the University of Utah, the \$6.4-million studies.

Dr. MAYS. Yes. The University of Utah first submitted its research proposal to NIH 3½ years ago. If we had been funded at that date, I would now be giving you some answers instead of talking about the possibilities of what we might do.

The CHAIRMAN. I agree.

Dr. MAYS. In my own mind, the most important thing to do is to continue the study that Dr. Marvin Rallison, a colleague of mine, began some 15 years ago when he and his coworkers surveyed children in the St. George region for lumpy thyroids. He made a survey of thyroid diseases. This study, as I mentioned to you, was funded by the Public Health Service under the encouragement of Senator Wallace Bennett.

When, at that time, some 15 years followup after the Shot Harry, Dr. Rallison did not see any increase in thyroid cancer, the Public Health Service terminated the funding. I think it was an unwise decision because one of the things we know about radiation-induced solid cancers is that for the most part, they have long latent periods. Leukemias have short minimal latent periods of about 2 years, whereas for bone cancers, it is about 4 years. However, for most of the other cancers, it takes at least 10 years before these cancers start to appear. There is a tendency for the lower doses to result in longer latent periods.

Therefore, I think it is enormously important, even aside from any questions on what the doses were, for Rallison and his coworkers to see whether there is, or is not, an increase in thyroid disease in the people around the test site.

Let me talk a little more about dose because there are some implications of this. Perhaps you have looked into this somewhat. If I get into areas you already have thought through, then I will go on because I have two other points I want to make.

My boss, Dr. Ed Wrenn, represents both the University and Gov. Scott Matheson, on the Dose Assessment Advisory Group to the Department of Energy. Dr. Wrenn tells me at the present time, that Dr. Lynn Anspaugh's preliminary reconstructions indicate that for an infant in the St. George region drinking local milk, the thyroid dose might be as high as about 500 rads, which is a high dose.

For an adult person, who has a larger thyroid gland——

The CHAIRMAN. We were talking up here. A couple of our doctors up here just about fainted with that. That is a high dose.

Dr. MAYS. Yes, it is a bit higher than the doses I had very crudely estimated some 20 years ago, but it is within the range of the 100-700 rads previously estimated by the St. Louis Committee for Nuclear Information.

Dr. Anspaugh is a very capable worker——

The CHAIRMAN. Excuse me, but I am trying to calm down our doctors back here.

Dr. MAYS. I think they are very much on your side. It is good to have doctors on a team that involves not only the law but also biological effects of radiation.

Since adults have a larger thyroid gland, the ionizations are distributed over more tissue. For an adult in St. George drinking the

same amount of milk that an infant child would, say about a quart a day, the corresponding dose would be about 50 rads.

You, yourself, just mentioned this phenomenon of hot spots. I would like to talk a little more about that.

The radioactive fallout can be concentrated hundreds, even thousands, of miles distant from its point of release by a phenomenon known as rainout. The rain simply collects it and washes it to Earth. Anyone who has had a car in a rainstorm knows of this phenomenon. His car gets dirty because the rain has collected the dust that it falls through.

There have been a number of hot spots that have occurred quite far from the test site. There was one in Troy, N.Y., which caused an estimated thyroid dose of about 15 rads to infants. Troy is about 2,300 miles distant from the test site.

In my own experience, when I was working with Dr. Bob Pendleton, who was radiation safety officer at the University of Utah during the Nevada tests of 1962, the region in Utah where we found the highest concentration of iodine in milk was in Altonah, Utah, some 400 miles away from the test site, probably caused by the phenomenon of rainout.

The reason I mention this is that close in to the site there were monitors who were measuring the external dose rates. However, there were no measurements made of iodine-131 in milk during the early years of testing. Therefore, it might be very difficult to say with confidence that even distant from the test site that the thyroid doses could not have been as high as at least 5 rads; at least one-tenth of the adult dose of something like 50 rads near St. George.

I took the American Cancer Institute's statistics for thyroid cancer. It turns out that during our lifespans about 1 out of every 200 people will develop some form of thyroid cancer. Back in the days of weapons testing, there were about 200 million people living here in the United States who were at potential risk from some fallout radioiodine.

If you take these 200 million people and assume that 1 in 200 would develop some form of thyroid cancer, we are talking about in this population of an eventual total number of about 1 million cases of thyroid cancer.

I'll wait while you confer with your assistant.

The CHAIRMAN. I got that.

Dr. MAYS. If I take the tables that Seymour Jablon has worked up, using the linear risk coefficient from the BEIR report, and I assume that we could not rule out the possibility of a thyroid dose as high as 5 rads, Jablon's tables clearly show that every single one of these cases of thyroid cancer would be eligible by your 10-percent cutoff in attributable risk to file a claim.

What you do about this is not the kind of scientific decision I can help you with. I can simply point out that if you use the risk coefficient from the BEIR report in the way that Seymour Jablon has done, if you use his risk tables, and if you assume you could not rule out the possibility of a thyroid dose at any particular location throughout the State as high as 5 rads, then you have 1 million people who, under this present ruling, might have a claim for compensation.

The CHAIRMAN. Would you say that is an average case or an extreme case?

Dr. MAYS. I think the actual doses throughout the United States were mostly lower than the 5 rads. However, to use this system of attributable risk, you have to know the dose fairly accurately. Giving persons the benefit of the doubt, when the doses are uncertain, means you are compensating on a random basis rather than selectively toward the people who are most likely to have radiation-induced cancers. It means there might be a very large number of people receiving compensation for thyroid cancer.

Let me talk a little bit about the risk coefficient, because this is a crucial point. As I mentioned to you, I was on the BEIR committee. The section on thyroid cancer was written by Dr. Henry Wellman. Because of my own interest, I followed through with him very carefully on the way the data were analyzed.

There are a number of problems. I think I should lay these out.

First of all, the A-bomb dosimetry data were based on the so-called tentative T-65 doses, developed at Oak Ridge by John Auxier and his group. Lately, these doses have been called into question. In fact, a number of atom bomb physicists now believe that the T-65 doses are incorrect, and that with the changed doses there will also be changed risk coefficients for the A-bomb survivors. I would anticipate that it will take something like 2 to 4 years before this revision is complete.

The risk coefficients for thyroid cancer are based, with one exception, on external radiation, radiation coming in from outside the body, usually at high dose rates, either from atom bomb gamma-rays or from therapeutic or diagnostic X-rays. The only exception to this is the Marshall Island experience where there was some iodine-131, but the dominant dose was from other iodine isotopes that had much shorter halflives and, therefore, gave their radiation at higher dose rates.

A further complication of the Marshall Island experience was the rather high dose of external gamma radiation accompanying this exposure.

It is generally observed in radiobiology that with sparsely ionizing radiation, such as gamma-rays and beta-rays, the lower the dose rate, the less the effectiveness per rad. The kind of exposures we had here in Utah and the surrounding areas, due to radioactive fallout doses to the thyroid gland, were primarily from iodine-131.

There is a population—I have a feeling that your assistant is telling you something that may be more important than what I am saying.

The CHAIRMAN. No, that is OK. Go ahead. Finish what you were saying.

Dr. MAYS. There is a population in which the risk coefficient could be directly evaluated for humans exposed to iodine-131. It is the same population of the most concern here; namely, the population downwind from the Nevada test site. This is one of the things that this epidemiology study is hoping to do—to be able to get a realistic number for the risk coefficient of thyroid cancer. It is possible that the number in the BEIR report is wrong. Just because it is published does not mean that it is necessarily right.

Let me shift over a little bit and talk about attributable risk. As I mentioned, I like the idea.

Certainly you have to have some kind of a cutoff level for attributable risk to make this system workable. The reason is we have 200 million people in this country who were exposed to some fallout. About 1 in 4 of these people will develop some kind of cancer during their lifespans. If there were not some cutoff, it means that you would have to compensate roughly 50 million people. In most cases, the cost of processing the claim would be more than the amount of the claim, if the claim were proportional to the attributable risk.

The CHAIRMAN. It is easy to understand why the Government does not want to admit liability with regard to all nuclear radiation. As you say, it would bankrupt the country if somebody would come in and say that applies to all 15, 17, or 20 percent of the people in this country who contracted cancer.

Dr. MAYS. Yes. You certainly could not compensate everybody who has a cancer. You have to set a limit some place. You have suggested 10 percent. Dr. Bond and a lot of other people feel more comfortable with the traditional 50 percent which corresponds to more likely than not. A 51-percent chance that a cancer was caused by radiation exceeds the 49-percent chance that it was due to other factors.

The CHAIRMAN. One reason we did that is because of the disparity in time, the lack of instrumentation at that time, and the lack of data at that time. We do not want to be unfair to those who may have a very serious difficulty of proving the 51 percent.

Dr. MAYS. Let me ask you a question. I am sure there are financial considerations that come in. Do you think, with the mood of the country in budget restraint, that there is likely to be a ceiling placed on the total amount of money that would be available for radiation compensation?

The CHAIRMAN. The way we have written the bill there is no ceiling, but we have made it difficult for those who really most probably do not have cases but who more probably contracted cancer irrespective of the radiation fallout. We have made it more difficult for them to get compensation. We made it easier for those who are more likely to have suffered from that.

However, we also have allowed a spread and a limit to liability on the part of the Government, so that there are not going to be runaway cases in this matter; nor are we going to have one jury in one State granting huge judgments and another jury in another State granting miniscule judgments. It is our way of trying to be fair to all, trying to resolve a problem, trying to get the Government to admit its liability in court in these cases, or at least be responsible for its liability and in the end have a system of justice which will work.

Dr. MAYS. I am sure that the system ideally should work well if the doses and risk coefficients were reliably known. It would then be an ideal system. In practice, however, neither the doses nor the risk coefficients are reliably known and a natural tendency would be to assign higher doses on an individual basis than those actually received and also to use an upper value for the risk coefficient. For example, Seymour Jablon has used the linear risk coefficient

rather than the linear quadratic, which most scientists feel is more valid and which predicts lower risks.

Assume, for illustration, that a person has a true attributable risk of 10 percent, but that you overestimate his risk coefficient by a factor of 2, and you also overestimate his dose by another factor of 2. The net effect of this is to shift his calculated attributable risk from the 10 percent up to 30 percent. If the combination of an inflated risk coefficient and an overestimated dose causes a ninefold increase in the calculated radiation risk to the individual, you would move his attributable risk from the 10-percent up to the 50-percent level.

I would like to suggest one thing which you might want to give some consideration. That might be to set the attributable level of risk at some higher number than 10 percent, perhaps even 50 percent, with the provision that after you see how well this works for compensations, you could have the option of later amending this down to lower levels of attributable risk.

The thing I worry about, Senator, is that this type of legislation is a new type of compensation for which there is no prior experience on how many people are going to present claims. I believe that most of the claims are likely to come from the thyroid cancers, based on what we know about the doses—or perhaps I should say, don't know about the doses.

The CHAIRMAN. I think you have a lot from leukemia as well, and there will be some others.

Dr. MAYS. Possibly some leukemias.

I am almost finished, but I would like to say something I feel very strongly about, Senator. That is for you to put the uranium miners back into the bill. They were in your bill originally.

I will tell you why. The uranium miners were digging out the uranium that then was used to make plutonium. The plutonium was exploded in bombs, and that is what caused the fallout. Certainly, the irradiation of the uranium miners is as much a part of the nuclear misfortune as the people who were showered with the fallout.

Furthermore, if you include the uranium miners, you will have very strong support from nearly all scientists that are knowledgeable in this area. The attributable risks for most of the miners with lung cancer will be extremely high, in some cases, up to 80 or 90 percent. In other words, the chance that their cancers were caused by radiation is some 5 to 10 times higher than the chance that they were caused by other factors, including smoking.

These miners have often been denied workman's compensation and have suffered. They are a unique group in that their risk is known to be high. I think this would do a tremendous amount of good for the country. I can understand that it may seem to be easier just to take a piece of the problem, such as the fission product fallout part of the problem, than to take all of it. However, I would urge you and your colleagues to give this question another thought.

In summary, I propose that you set a maximum amount that might be allowable for a cancer, say something like \$400,000. Then you would multiply this by the attributable risk for the particular

person—based on the best estimate of his dose, a realistic risk coefficient, and the spontaneous incidence rate for his cancer.

If the attributable risk were 50 percent, that would bring the \$400,000 maximum down to \$200,000. Then you would multiply this by the degree of severity of the cancer, which could range from one down to zero.

A special problem is the case of a person who has cancer, but has not died from the cancer. For example, if a person had thyroid cancer, and this were surgically removed, and he were believed to be free of the disease, then you might assign a degree of severity of one-tenth or so and compensate him at 10 percent of what you would have compensated him if his cancer had been fatal.

There is always the possibility that the surgery did not completely remove the cancer or that this person may develop a second cancer. In that case, there would have to be provision for a person to come back for a second claim due to a change in his medical status.

The CHAIRMAN. Of course, under this program the courts will be able to take all of that into account. It will be a matter of proof on those issues. However, your comments are well taken.

Dr. MAYS. I will just close by saying that I think the concept of attributable risk is a very good approach. It is not a perfect approach, but it is certainly the best one that I can foresee. It does have the advantage that it gives the people whose cancers are most likely to have been induced by radiation the best probability of getting compensation.

Thank you.

The CHAIRMAN. Thank you, Dr. Mays. I would suggest that your concern about absolutely accurate data reflects your great scientific background. However, I am concerned about the downwind residents and that they merit compensation now, not in 4, 10, or even 30 years, which it might take to be absolutely scientifically as certain as possible. Therefore, we need to act on the best available data now and continue to study this area and continue to do everything we possibly can.

You also have suggested over 1 million cases of thyroid cancer might be compensated by this legislation. yet, our consultations with your colleagues who are experts on the radiation effects advised us that a radioepidemiological approach would target the compensation only to deserving—and that is the important word, “deserving”—cancer victims.

How do you account for your difference of opinion from other experts?

Dr. MAYS. First of all, the system you are proposing is not really radioepidemiological; it is radiodosimetric. The epidemiology part is a part that I think should be done. We should find out what the true risk from iodine-131-induced thyroid cancers is.

The risk coefficient that has been used for thyroid cancer is probably too high. This is a possibility. It may be that the actual doses are not 5 rads; they might be lower. However, even if you brought them down by a factor of 2, you still would be compensating all the women on the 10-percent cutoff level, if the doses were as low as 2.5 rads.

As to the question of truly deserving people, I hope this would include not only those who died from cancer, but also those who have medical expenses as a result of their cancers, even though those cancers, hopefully, have been cured. The undeserving would be persons who did not suffer from cancer and whose cancers were discovered only at autopsy.

The CHAIRMAN. Dr. Mays, I realize that there are uncertainties concerning the precise relationship between radiation exposure and the prevalence of cancer in the population, especially if the radiation exposure is not a high-level exposure.

I also realize that there are uncertainties and will always be some uncertainties concerning the doses of radiation that downwind citizens or victims actually receive. However, given all this, is it not so that the method outlined in this legislation is probably the best method for judging the merits of individual cases on a case-by-case basis?

Dr. MAYS. You are asking me some questions I really cannot answer because they are outside of the scientific realm, such as the urgency for the compensation now rather than waiting a few years until we get numbers which are more reliable.

My concern is that if perhaps you go into something prematurely and you end up compensating a large number of people who have an extremely low probability that their cancers were actually radiation-induced, that it will sour the system on this approach, and it will not permit those whose cancers were, in fact, much more likely to have been caused by radiation to get compensated.

I include in this the uranium miners. To me, they are in the same category as the radium dial painters. They have an industrially caused radiation cancer. The humane and right thing to do is to make sure that these people are taken care of first.

As far as compensating the uranium miners, I would feel very comfortable if this were done immediately. I think the scientific evidence is strong enough. This is why I would suggest that oftentimes in these areas of uncertainty, instead of making the great leap and finding the water is really freezing, one can take a careful series of steps. This is why I suggested for your consideration something in the order of a 50-percent attributable risk level for starters, not necessarily the end, to see how it works.

The CHAIRMAN. One of the problems is that the starters sometimes become the enders. What we would like to have is the broad spectrum so we can develop this system so it really does work. If you start with a 50-percent level, you might be failing to compensate many people who deserve some measure of compensation.

You know, this is not a unique system in that sense. The attributable risk approach will be unique. The probable cause effect probably will be unique in the field of compensation law. However, even they are attributes or derivatives of already-existing tort law.

Dr. MAYS. Actually, it is the precedent that your bill will set that pleases me the most because, certainly, radiation is received by people other than just from fallout. This is just one of the examples. These are people involved in radiation accidents.

It seems to me that this system offers not a perfect method, but the best rational method that we presently have. I am hoping that

you can frame this in a way that it will serve as a model for other types of radiation compensation.

The CHAIRMAN. Mrs. Gregorson this morning stressed the importance of having assessments of both doses and numbers of excess cancers that are independent of the Government's own estimates.

Dr. MAYS. Yes. I made a special note of that in my own notes.

The CHAIRMAN. I personally agree with her that such independent assessments are necessary. For this reason, I have supported and worked very hard to obtain the funding for the University of Utah's research proposals. However, I believe it might be important for the record that you describe briefly what those proposals are and why they are so important.

Dr. MAYS. Yes. I would be quite pleased to do that.

We were incredibly naive at the beginning when we first submitted our proposal, Senator. We were encouraged by HEW to submit the rather large proposal that Governor Matheson talked about earlier, about \$14 million.

That proposal was turned down. However, interestingly enough, there were three pieces of it that various agencies have expressed interest in. The Department of Energy had expressed interest in our thermoluminescent dosimetry of brick. We prepared a proposal and sent it to them. It was peer reviewed and funded. We are now actually getting measurements on that?

The CHAIRMAN. So you are working on that?

Dr. MAYS. We are working on it. Within the Department of Defense, the Defense Nuclear Agency [DNA] was interested in techniques using iodine-129, which is a long-lived isotope of iodine, to estimate the original doses from short-lived iodine-131. We wrote up the proposal. It was reviewed. We were funded. Roberta Roswell, in our group, is now the main investigator on this.

The CHAIRMAN. We are aware of these. There has been some funding right up until now. This \$6.4 million is going to be a very, very important part of it.

Dr. MAYS. There was another comment, too, about the inhalation. I think Mrs. Broudy mentioned the inhalation dose.

Dr. Narayani Singh, of our laboratory, is funded by DNA to evaluate the plutonium concentrations in lungs, liver, and bone. If there were large amounts of fallouts actually inhaled, say by soldiers around a nuclear weapons test, then this should increase their plutonium burden to an extent that we can measure. We are now working on these three projects.

The study that has had the trouble is the study that is to be funded by NIH. This is on epidemiology. It consists of a leukemia part in which my colleague, Dr. Lynn Lyon, wants to look at the adult leukemias and see whether or not they conform to the same pattern that he saw in the juvenile leukemias.

The CHAIRMAN. That would be extremely valuable if we could get that done.

Dr. MAYS. Yes.

The CHAIRMAN. Not only for this bill, but in the whole area of public health.

Dr. MAYS. Then the iodine studies—I already have talked quite a bit about those.

I perceive that what the problem is, Senator, is that these studies are not strictly scientific studies. They involve both scientific issues and social issues. When our proposals went into the NIH review process, the reviewers considered only the scientific issues. It is extremely corrosive to have citizens in a country believe, whether rightly or wrongly, that their Government has lied to them, that it has irradiated them causing cancer—and now is stonewalling it and refusing to accept responsibility.

In retrospect, I wish that we had approached people such as you and Senator Garn and gotten you to put a special bill through that would have covered both the science and the social issues. The science is important, but I think not as important as the social issues. Then we could have evaluated the magnitude of radiation effects in southern Utah and gotten this thing resolved. Instead, it has been ping-ponging back and forth. It has been extremely frustrating for us. I think it also has been frustrating for some of the administrators in the National Cancer Institute, too.

The CHAIRMAN. Imagine how frustrating it is to me.

Dr. MAYS. Of course, but I might say that you have been very effective in your persuasion. If we do get this funding to go through, it will be in large measure due to your persistence and skill.

The CHAIRMAN. I am suggesting that you assume that you have it because I have told that you will get it. They already have approved the \$2.3 million. That is \$1.3 million more that the California people wanted. They could not have done the necessary studying for \$1 million.

Frankly, I have been very pleased with Dr. Chase Peterson, the vice president of University of Utah, and others who have hung in there with me and said: "Look, we are not going to do an inferior study." Consequently, I have been assured by a number of the top level people in Government that we will get the full amount. Therefore, I suggest you get started even with the \$2.3 million, and let's just put it to them. Let NIH have to come up with that initial funding, and then, of course, we are going after the Department of Energy and the Department of Defense to get the other two-thirds from each of them.

I would suggest you get started because I think the sooner, the better. Certainly these investigations and these researches, it seems to me, will be extremely valuable in the future, certainly in this case and in this legislation, but in other areas as well.

Therefore, I think what you people at the University of Utah do is very important. I want personally to compliment you for it. I think you have been tremendous. I have yet to see testimony coming from the experts at the University of Utah that has not been excellent, that has not been accurate, and that has not been fair and objective.

I get a little tired of some of the approaches we get from the Federal Government, however. You know, the bureaucracy tends to foment self-protection rather than what is always just and right. I think they are getting there, though, because every one of them has come in and admitted that this is probably the best approach and the best way to solve this problem that we have had yet. I have to admit this is the way to get there—through a series of

hearings, a series of witnesses from all persuasions, and of course pushing as hard as we can.

Keep in mind, we only have three States involved here basically—six Senators and relatively few Congressmen.

WOMAN FROM AUDIENCE. I think you have a lot more States involved when you look at the atomic veterans.

The CHAIRMAN. That is true when you look at that. It has been a building thing rather than something that has been an overwhelming mass of demand. That is what has made it very difficult.

However, we have come a long way. We are going to keep pushing until the job is done. It is that simple.

I appreciate people such as you and what you have said here. You said basically that the original assessments of the doses of radiation were crude, that the uranium miners have a valid claim to compensation because the uranium they mined made the plutonium used in bombs. You would have scientific support for this, a lot of scientific support for this.

It was restated that the citizens of southern Utah and Nevada do not want to rob the treasury; they just want justice. That has been a constant theme throughout these hearings.

The atomic veterans spokesman says that the money needed for their victims is not large. They are also trying not so much to get money, but to get justice. Again, there is that justice theme.

You stated, Dr. Mays, at least as I understand it, that before recent studies released by DOE could be confirmed, it would need a colleague's review. That is important, also, for us to understand that the recent studies are averages. You made the point that the individual doses are what we are trying to find and, until we do, it is very difficult to use averages and say: "Well, this is what should apply to everybody."

I was interested in your comment that some internal thyroid doses are in excess of 500 rads, or may be in excess of 500 rads. That is really high-level radiation.

Dr. MAYS. These are preliminary estimates.

The CHAIRMAN. Yes.

Dr. MAYS. They may be revised.

The CHAIRMAN. Right.

Dr. MAYS. However, certainly, they are in the same ball park as estimates that some of us had made back 20 years ago, in the early 1960's.

The CHAIRMAN. To me, that is an absolutely fascinating statement because that has caused a lot of our scientists around here to gulp just a little bit. This is even more serious than maybe some of us had thought.

[The prepared statement of Dr. Mays follows:]

Written Testimony^{*}

ON THE ATOMIC BOMB FALLOUT COMPENSATION BILL OF 1982

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^{*}Hearings before the Senate Committee on Labor and Human Resources in Salt Lake City on 8 April 1982.

My name is Charles William Mays. I am a radiation physicist and a research professor of Pharmacology at the University of Utah. I have been the physics group leader of the Radiobiology Division at Utah since 1957. I am a member of the U.S. National Council on Radiation Protection (NCRP) and serve on NCRP Committee 40, "Biological Aspects of Radiation," which is chaired superbly well by Dr. Victor Bond. I am a member of the Internal Dose Committee of the International Commission on Radiological Protection (ICRP). I served on the 1980 BEIR Committee of the National Academy of Sciences.

I was, perhaps, the first scientist to seriously suggest that the thyroid doses from Nevada fallout might produce an increase in thyroid cancer among residents of Southern Utah. I testified on the thyroid doses before the Joint Committee on Atomic Energy during its hearings on fallout during August 1963.⁽¹⁾ Senator Wallace F. Bennett of Utah was a member of the Joint Committee, and largely because of his support, the U.S. Public Health Service began a study of thyroid disease, comparing children exposed near St. George, Utah, with unexposed children near Safford, Arizona.⁽²⁾ When this study failed to show an increase in thyroid cancer, it was terminated in 1971, perhaps prematurely. I will return to this later.

At the outset, I would like to make it clear that I regard the concept of attributable risk, as advanced recently by Dr. Bond, as a generally desirable method in the compensation of alleged injury from radiation. In fact, I proposed such a system to my students in 1964, giving as a numerical example a hypothetical case of leukemia following a dose of 25 rads. In this example, 50% of the total risk was attributed to the radiation, and thus, a compensation at 50% of the full amount was proposed. A copy of my handout is appended to my present testimony.

However, for such a system to be feasible when large numbers of persons are believed to have been irradiated, the following four items are needed:

(1) To prove that a cancer has occurred and to evaluate its severity; (2) to have a reasonable estimate of the radiation dose to the tissue from which the cancer arose; (3) to have a reliable risk coefficient, and (4) to set a minimum level of attributable risk. The need for better specification on each of these four items will be discussed with special emphasis on thyroid cancer.

(1) PROOF OF CANCER AND DEGREE OF SEVERITY: It is essential to determine that the person actually had cancer. Such an evaluation, based on clinical records and histological evidence, would best be made by an impartial board of medical experts, rather than by only one person. The amount of compensation should be proportional to the degree of severity. Certainly, it would be unfair to equate a thyroid cancer cured by surgery to a fatal leukemia. If a cancer, originally believed to be controlled, subsequently recurs or causes death, it may be necessary to revise upward the degree of severity and the corresponding compensation.

Dr. Frank Tyler, an internationally recognized expert on thyroid diseases at the University of Utah, told me that occult thyroid carcinomas can be discovered in about 20-30% of routine autopsies if sequential sections are taken throughout the thyroid gland. These small cancers, discovered at autopsy, have had no adverse effect on the person's health. If, however, persons with occult thyroid carcinomas would be eligible for compensation, it could make the detailed sectioning of thyroid glands a very lucrative business.

I suggest that the degree of severity be set numerically at 1 for fatal cancers and zero for subclinical cancers. For other nonfatal cancers, the

degree of severity should be set on an individual basis between 0 and 1, depending on the extent of the medical complications, as evaluated by the medical board.

(2) RADIATION DOSE: At the present time, considerable uncertainty exists in the actual doses received by individuals. While numbers have been published^(3,4,5) for external gamma-ray exposures, based on direct measurements within 200 miles of the Nevada Test Site, these numbers refer to average exposures to communities, not the tissue doses to individuals. While exposures beyond 200 miles were generally not measured directly, recent indirect evaluations by Beck and Krey,⁽⁶⁾ based on their analysis of cesium-137 and plutonium-239 and 240 in soil, suggest that external gamma-ray exposures from NTS fallout may have been higher in Northern Utah than, on the average, in Southern Utah. While this possibility is very interesting, it would seem highly desirable to verify it independently before these results are used to calculate compensation (or the lack of compensation). Using thermoluminescent dosimetry of brick, our Laboratory is attempting to reevaluate the external doses in Southern Utah, independently of AEC estimates, and to extend the dosimetry to other communities more distant from the test site. But it will take us several more years to obtain our results.

The greatest dosimetric uncertainty, however, is in the thyroid dose from the ingestion of radioactive iodine, mainly in fresh milk. A major complication is that milk was not evaluated for iodine-131 until 1957. Estimates of thyroid doses are being calculated by Dr. Lynn Anspaugh's group at Lawrence Livermore Laboratory. The calculations involve a series of imprecise

assumptions. Preliminary estimates (subject to subsequent revision) of average thyroid doses to infants drinking local milk at St. George, are about 500 rads. For St. George adults with equal milk consumption, the average dose to the thyroid gland would be about 10 fold lower, or 50 rads. High depositions of radioiodine are not restricted to Southern Utah, but have been calculated as far from the test site as the milkshed near Troy, New York,⁽⁷⁾ presumably, due to the deposition of fallout in rain. When we analyzed milk samples collected by Dr. Robert C. Pendleton throughout Utah in July 1962, the highest observed concentration of iodine-131 was at Altonah, Utah, about 400 miles from the Nevada Test Site. The thyroid dose to an infant drinking 1 liter of this milk per day was about 20 times higher than the average thyroid dose to all Utah infants from that test series.⁽⁸⁾ It is highly probable that similar hot spots occurred in the tests prior to 1957 (when iodine-131 in milk first began to be measured). But because no iodine-131 measurements were made earlier, it is unknown where these hot spots were located. The point is that it would now be very difficult to disprove, in view of thyroid doses of 50-500 rads at St. George, that thyroid doses exceeding 5 rads had not occurred elsewhere.

(3) RISK COEFFICIENTS: Seymour Jablon, in his calculations of attributable risks, has used the risk coefficients based on the linear model, whereas the 1980 BEIR Committee, of which I was a member, generally agreed that for most cancers induced by low LET radiation, the dose-response is best described by a linear-quadratic.⁽⁹⁾ At the low and intermediate doses of present concern, the linear model predicts about twice as many cancers as the (preferred) linear quadratic. Additional problems exist. The risk coefficients in the BEIR Report were based extensively on the tentative "T65" doses

to the A-bomb survivors.⁽¹⁰⁾ Drs. Lowe and Mendelsohn of the Lawrence Livermore Laboratory, and others, have shown that the T65 doses are likely in error, and consequently, most of the risk coefficients will have to be re-evaluated.⁽¹¹⁻¹³⁾ This reevaluation could take 2-4 years, but should result in risk estimates of much better reliability.

Dr. Henry Wellman wrote the section on thyroid cancer for the BEIR Report, and because of my interest in this disease, I closely followed the analysis. It is based almost exclusively on external radiation at high dose-rates, the one exception being children in the Marshall Islands, whose thyroids received a mixture of external gamma-rays, very short-lived isotopes of radioiodine (accounting for most of the dose), and iodine-131. However, in the USA, because of the concentration of iodine-131 in milk and the delay in its consumption, nearly all of the thyroid dose from NTS fallout was from iodine-131 at low dose-rates that may have decreased its risk per rad. In some of the thyroid studies in the BEIR Report, the risk coefficient is too low because the person years at risk prior to the 10 year minimal latent period were improperly included. On the other hand, occult carcinomas may account for 1/3 to 1/2 of the thyroid carcinomas reported in some series of patients, thus inflating the risk coefficient. The BEIR Report risk coefficient for thyroid cancer was weighted heavily by results in Jewish children --- which the BEIR Report points out seem more sensitive to thyroid cancer-induction than non-Jewish children, on the average. Most of the children in Southern Utah were not Jewish. However, proper reexamination of Southern Utah individuals exposed to NTS fallout as children, could show whether a significant increase in thyroid disease has, or has not, occurred. My

colleague, Dr. Marvin Rallison, who participated in the original examination of the children in the late 1960's, is prepared to resume this follow up, some 15 years later (30 years after exposure of the St. George children from Shot Harry in 1953), to see whether thyroid tumors of long latency have now appeared. Despite the delay of 2-3 years that this reexamination would take, the information on whether a fallout-related increase in thyroid cancer has actually occurred would greatly simplify the decisions on compensation. If our proposed studies had been funded when submitted 3½ years ago, we could now give answers instead of questions.

(4) ATTRIBUTABLE RISK: Unless there is some cutoff level for the percent of the total risk that is attributable to fallout, then each cancer occurring among the 200 million Americans exposed to NTS fallout from 1951 through 1962 would have to be compensated. In many cases, the cost of the evaluation would exceed the amount of the award. An arbitrary cutoff level of 10% in attributable risk has been suggested. This might be appropriate if the actual doses were known and the risk coefficients were accurate. But in the real world of incomplete information, this is unlikely. A simple example illustrates the point. Statistics from the American Cancer Society⁽¹⁴⁾ indicate that about 10,000 Americans develop thyroid cancer each year and 2,000,000 Americans die each year. Thus, about 0.5% of Americans will develop thyroid cancer sometime during their lifetimes. Since about 200,000,000 Americans lived during the time of NTS aboveground testing, about 1,000,000 cases of thyroid cancer are expected to develop eventually among those potentially exposed. To give the benefit of the doubt to exposed persons (especially those exposed during 1951 through 1955, before fallout iodine-131 was measured),

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assume the thyroid doses were at least 5 rads, since in most individual cases doses of this magnitude could not be disproved. Using the tables prepared by Seymour Jablon for a thyroid dose of 5 rads, the attributable risk varies from 13.1-73.3% for males and 23.1-68.2% for females. Thus, all of the 1,000,000 persons developing thyroid cancers might qualify for compensation as a combined result of a presumed 5 rad thyroid dose, a risk coefficient that may be inappropriate, and a cutoff level of 10% in attributable risk. Even disqualifying those persons whose chance for NTS fallout was minimal (i.e., Hawaii and Alaska) and decreasing the presumed dose, the number of persons to be compensated could still be HUGE.

If the Radiation Compensation bill must be enacted before we know the doses better and can improve the reliability of the risk coefficients, particularly for thyroid cancer induced by iodine-131, I suggest that serious consideration be given to using a cutoff of 50% for attributable risk, with provision to amend the cutoff level in the future if experience shows that a 50% cutoff level does not paralyze the U.S. Treasury. An attributable risk of 50-100% conforms to the legal phrase, "more likely than not" (a 51% chance of having a radiation-induced cancer exceeds the corresponding 49% chance that it was due to other factors). It might be easier to get the bill passed with a 50% cutoff than with a 10% cutoff.

There is a natural and humane tendency to give the cancer victim "the benefit of the doubt," by consciously or subconsciously overestimating the dose received or overestimating the risk coefficient. But this tendency has its drawbacks. Especially if the government sets a limit on the total money available for compensation, such as might occur in the present mood for

fiscal restraint, a deliberate exaggeration of the risks from low doses could result in increased compensation for persons whose cancers were not caused by radiation, with the result that insufficient money would remain to compensate those whose cancers were probably radiation-induced. Therefore, to make the proposed system work most fairly, it is essential that best values of the actual doses and risk coefficients be used, rather than inflated estimates.

A number of investigators, within and outside of Utah, are reevaluating the doses from fallout. At our Laboratory, this includes Dr. Edwin Haskell who, with DOE support, is developing the technique of thermoluminescent dosimetry of brick so that the external dose from fallout gamma-rays can be evaluated for homes (and the people living in them). Roberta Roswell, with DOD support, is evaluating the year-by-year change in fission-produced iodine-129 in autopsy samples of thyroid tissue. We hope to use the long-lived iodine-129 (half life of 16 million years) as an indicator of the thyroid dose from the short-lived iodine-131 (half life of 8 days) that has now completely decayed away. Hopefully, this will provide an independent method of evaluating thyroid dose. Dr. Narayani Singh, with DOD support, is measuring plutonium and uranium in the lungs, liver, and bones of selected autopsied persons throughout Utah and other states. If significant amounts of radioactive fallout were inhaled, the body burdens of plutonium or uranium (depending on bomb composition) should be elevated. Dr. James Smith should soon be funded by DOD to develop an ultrasensitive technique for plutonium assay of very small bits of tissue by neutron-induced fission of the plutonium. This should enable the degree of plutonium contamination in a person to be evaluated even if only small bits of autopsy tissue are still available. It will be several years before we obtain the results from these studies.

I urge that consideration be given to broadening the compensation to cover the underground uranium miners who suffer lung cancer. These unfortunate persons are true victims of the nuclear age. The uranium was used to make plutonium, which, when detonated, created the radioactive fallout. In many cases, the attributable risks of the uranium miners with lung cancer are as high as 80-90% .

I will close with a numerical example of how my proposed compensation formula would work. Suppose that \$400,000 is the upper limit for cancer compensation. Assume an irradiated person subsequently develops a thyroid cancer, for which the attributable risk from radiation was 50%. The cancer was removed surgically, with few complications, and a degree of severity of 0.1 was assigned.

$$\text{Compensation} = (\$400,000)(0.5)(0.1) = \$20,000$$

If the cancer recurs, producing additional complications or death, the degree of severity may be revised and the compensation increased accordingly.

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APPENDIX "A"

9 December 1964
C. W. Mays

COMPENSATION FOR RADIATION INJURY
Is the present system adequate?

Proper compensation for injury following irradiation is complicated by (1) ignorance in the dose-response relationships, especially at low doses, (2) the long delay after exposure required for certain types of injury such as cancer or cataracts to become evident, and (3) the difficulty in separating irradiation-induced effects from those occurring naturally. The following imperfect solution is offered in the hope of stimulating thinking toward better solutions. Especially valuable ideas were contributed by Jim Byrne, Bruce Church, Jerry Kenner, Earl Petersen, Vern Rogers and Bill Wagner in connection with the course, Radiation Physics Applied to Biology (Anatomy 300, University of Utah).

HEALTH INSURANCE FOR EMPLOYEES

A health insurance plan which would pay for all injuries would bypass the thorny question of what caused the injury. A basic coverage could be mandatory for all employees, with half the premium paid by the individual and the other half, by the company. This health insurance could be made a part of our present social security system. Individuals desiring extra coverage, in addition to the basic health insurance, could do so at their own expense. A limitation to compulsory health insurance is that not all members of the population are employees covered by social security.

COMPENSATION FOR OTHERS

For persons not covered by health insurance, protection against radiation might properly be considered a responsibility of government. Protection of the inland Eskimos against the high levels of fallout (over which they have no control) would seem appropriate. However, many taxpayers would not relish paying for all injuries and all diseases in our population! The difficulty arises from the impossibility, except on a statistical basis, of separating the small number of delayed injuries caused by irradiation from those occurring "naturally".

However, if the dose is known, an "administrative" probability can be computed that the injury resulted from radiation. Therefore, it is proposed that compensation be proportional to the probability that the injury was caused by radiation. The greater the probability, the greater the compensation.

Suppose a health physicist receives a 25 rad exposure in a reactor criticality. Assume from results on atom-bombed Japanese and x-irradiated patients that each rad of total body exposure increases the incidence of leukemia by 1 leukemia/ 10^6 persons per year. Thus, a 25 rad dose is predicted to increase his chance of leukemia by $25/10^6$ per year. Suppose the man develops leukemia at age 30. The natural incidence at this age is $25/10^6$ per year but because of his radiation exposure, his presumed risk = $(25 + 25 = 50)/10^6$ per year. Since in this case it appears that half the risk is due to radiation, the man would be compensated 1/2 the full amount.

The following steps would be taken:

- 1) Establish the extent of injury by competent medical authority.
- 2) Estimate the radiation dose as accurately as possible using records such as film badges, excreta assays and total body counts.
- 3) Compute the "administrative" probability that the damage was caused by radiation. This "administrative" probability would be analogous to the "true" probability in the same way that a radiation modifying factor corresponds to the true RBE.
- 4) Compensate in proportion to the computed probability that the injury was caused by radiation.

The CHAIRMAN. I might mention that one of the things that has been brought out here today, which we should have known but have not had on the record before, is that many southern Utahans, Nevadans, and Arizonans are not covered by insurance, and there are some indications that many individuals have paid in excess of \$200,000 in medical bills with no help from the Federal Government, even though this certainly could not have been their fault.

The Governors have made the point that they continue to want medical research and they want the medical records of all the victims of these fallout areas, so that we can get some medical research that will be beneficial to the whole country. I personally have pushed for that ever since I have been back there. However, it is tough to get that without justifying the need and the case. It is nice to talk about having the egg before the chicken, but you still have to get the chicken there first, some people say.

Mr. MANGUM. The highest levels of concentrations they have found not only in Utah but in the Uintah Basin have been ignored. Testing which has been done down there during that period of time showed consistently that the Uintah Basin received a high level of exposure from fallout and people out there have suffered very dramatically in cancer. We have not received the attention that southern Utah and Nevada have received, but we have the same problem. I hope that will be explored further by your committee.

The CHAIRMAN. That is good. This is one of the fine attorneys representing some people out in the Uintah Basin. He has been making this point, and it is a very important point. It is a point we cannot ignore.

George, we appreciate your standing up and doing that. Let me put your name in the record: George E. Mangum.

We appreciate your making that statement here today.

I might also mention that, of the 12 veterans who were compensated, the doses were undetermined; yet, they were measured by film badges at low levels. An atomic veteran here today related his film badge rated a number of doses less than it really was. Yet, at the same time the Atomic Energy Commission officials pointed at a measuring device and cleared the area because of the high levels in their monitoring. These are the types of things that continue to make one record after another and continue to build the case to right the wrong and the injustice which has occurred.

However, above all, I personally believe that the scientists at the University of Utah have done a tremendous, commendable job under the circumstances in helping to bring this to the attention of the public and helping to justify the scientific bases and reasons for these hearings, this bill, and of course ultimately the just solutions in the future.

As we have gone through the worry of how do you do this so that it is just and yet not a ripoff of the taxpayers. I think we have arrived at the way of doing that in this bill. In spite of some of our differences with Government witnesses, almost every one of them has admitted this bill is not only reasonable but a very good way of trying to solve these problems, assuming they agree on the underlying scientific data.

I think these hearings today have been helpful also. I personally am very appreciative for everybody who has been here.

I presume we will have to have at least one, if not two, more hearings. However, we are going to mark up anyway if I can get the committee to meet. Hopefully, we can convince enough of our colleagues to report this out of the full Labor and Human Resources Committee. That will be the first time that has ever been done in the history of this country. It is no small thing.

A number of my colleagues still have questions about just how much science is backing the approach we are taking. A number of them still have questions, and the major questions they have center around just how much is this going to cost the taxpayers. I might add that the Government's major concern is—will this be the beginning of everybody's having compensable claims for one reason or the other, for toxic wastes and other occupational health hazards and radiation around nuclear radiation plants to right in the doctor's office on radiation through X-rays, which of course are very, very low level and basically where the means certainly justify the risk?

To make a long story short, we have come a long way. We are getting there. We are going to keep holding these hearings and keep moving ahead until we do get there.

Ms. LEGARRETA. Senator Hatch, I am Dr. Dorothy Legarreta. I am coordinating genetic defects in atomic veterans across the country. We are finding about 1 in 5 veterans reports—

The CHAIRMAN. Would you please come up and take the microphone so that we can get your remarks in the record? Please state your name again.

STATEMENT OF DOROTHY LEGARRETA, COORDINATOR, GENETIC DEFECTS IN ATOMIC VETERANS

Dr. LEGARRETA. It is Spanish Basque. My father was a sheepherder.

The CHAIRMAN. Just spell it for us.

Dr. LEGARRETA. L-e-g-a-r-r-e-t-a.

The CHAIRMAN. That is what I thought you were going to say, but I knew you were worried about it.

Please proceed.

Dr. LEGARRETA. I am coordinating genetic defects in atomic veterans across the country. What we are finding in our preliminary surveys, which of course are not epidemiologically sound, is that about 20 percent of the veterans who report problems also have reported genetic defects in their children. I am not referring to defects such as allergies or hyperactivity, but organ defects, mental retardation, et cetera.

If you are going to have subsequent hearings, it is time to hear about the children of the downwind people, the children of atomic veterans, the children of uranium miners, the children of civilian workers.

The CHAIRMAN. Thank you so much, Doctor. We appreciate having you here. [Applause.]

Ms. DURAN. My name is Debbie Duran. I am concerned with the milk processors, the people who work in regard to processing uranium, and the other thing that he was suggesting. Will those people

also be included under the Uranium Miners Compensation Act or how will that be handled?

The CHAIRMAN. We will have to see what the final result is. In this bill we are trying to take care of all those who suffered as a result of these atmospheric tests. This bill is difficult enough. It is very difficult to have a broad-based cross section. At least, that has been our experience. However, we are going to see.

Keep in mind, this will be the basic bill, assuming we get it out of committee. It will be subject to amendment. Anybody can come in and try to amend it, for whatever purpose there may be.

However, we need a bill so that we can go from here and justify even further scientific study and, hopefully, something which is my goal ultimately, set up a clinic right here in the intermountain west, preferably Utah, where we have such adequate State genealogical records that will help us get into the genealogical-medical problems people have had and hopefully benefit the entire Nation. This certainly is a goal, but we have to at least reach a bill before that goal can ever come to fruition.

A VOICE FROM THE AUDIENCE. I was concerned with lung cancer-induced types of things.

The CHAIRMAN. These are concerns that have been discussed in this bill.

At this point we will insert in the record all statements and material submitted for inclusion.

[The following statement was subsequently supplied for the record:]

Testimony of
McDonald E. Wrenn, PhD
Professor and Director Radiobiology Division
Department of Pharmacology
University of Utah School of Medicine

I appreciate being asked by the committee to comment on the latest draft of the proposed fallout compensation act for those exposed to fallout from nuclear testing aboveground in Nevada. I believe significant technical improvement has been made in that part of the act related to fallout exposures, but I regret the exclusion of the uranium miners for whom the causal relationship of lung cancer with radiation exposure in uranium mining is both well established from epidemiological and dosimetric studies and well accepted by most scientific experts in the effects of ionizing radiation.

The committee has adopted the concept of attributable risk which was suggested by Dr. Victor Bond in the earlier hearings. Conceptually this appears to be a sound idea and perhaps the only manner in which one may reach rational and equitable conclusions given the complex problem of identifying people whose cancers may have been radiation induced, when in fact close to one quarter of the population will develop "natural" cancers not of a radiogenic origin. The attributable risk approach is a means to assess the likelihood that a cancer may have been of radiogenic origin, and is not a way to predict the likelihood of developing a cancer.

The size of the compensable population and the numbers of individuals eventually compensated depends on the details of how the attributable risk concept is developed and incorporated into the bill. The attributable risk approach is a dosimetric as opposed to an epidemiologic approach, using estimates of dose, prior estimates of risk per unit dose which depend on both the results of epidemiological and radiobiological studies conducted elsewhere, but not those not yet conducted in the exposed population under consideration here. So much depends on the details of the formulae to be selected and also upon the numerical values of the coefficients chosen that it is difficult to comment in detail. However, several general comments can be made.

The size of the population which will be compensated with such a formula depends very critically on the minimal or critical

probability of attributable risk chosen, above which people would be compensated. The bill propose that a critical attributable risk of 10% be used. I cannot accurately estimate (nor do I believe anyone else currently can) the size of the population from which those who might be eligible for compensation would be drawn nor the numbers who might be compensated.

The most difficult part of the estimation probably comes with thyroid cancer. However, the size of the population will be very sensitive to this critical level. Use of a critical level of 10% attributable risk will lead to compensation of a larger number of people with a given cancer, such as leukemia, than those of radiogenic origin. The approach also unfairly, but probably unavoidably, excludes from compensation those cancers which may be radiation induced but which are also very common in the population from other sources, since the critical dose associated with the critical level of attributable risk will be much higher for common cancers than for rarer forms. The compensable cancers under this scheme may well turn out to be limited to thyroid, some leukemias, and bone cancers.

Finally both the mathematical models used to describe dose response and the numerical values of the coefficients used in the attributable risk formulae such as the linear risk coefficients for various cancers are the subject of continuing scientific study and debate. The most authoritative summary was recently produced by the BEIR committee of the National Academy of Sciences of which Dr. Mays is a member. He will comment in detail in his testimony on the uncertainties in the risk coefficients. Suffice it to say that there is probably a factor of 10 uncertainty in the appropriate risk coefficient in man for internally deposited radioactive iodine and the development of thyroid cancer.

The thyroid dose estimates are very uncertain and are currently made with mathematical models which depend as a point of reference on external gamma ray exposure rates from fallout measured in the past as opposed to direct measurements in milk or

in man. The first demonstration that human thyroids accumulated radiiodine from atmospheric testing was published by Dr. Lester Van Middlesworth in 1955, but it was not until the end of the decade that it was appreciated that milk rather than inhalation was the major route of exposure. I participated in some of the earliest studies which demonstrated in 1961 the central importance of milk consumption in producing thyroid exposure. Copies of the relevant scientific papers were furnished to the committee with my previous testimony.

Accordingly our understanding of the magnitude and distribution of radiation doses which occurred from consumption of radiiodine contaminated milk prior to 1961 are not very good. Unlike the external exposures which were restricted to the areas directly exposed to the fallout, exposure to the thyroid could be over a much larger geographic area to which milk was shipped from areas where fallout had deposited and which had dairy herds. To know how large these doses were and the sizes of the populations affected it will be necessary to understand the former milk production and distribution systems, the amount of radiiodine which entered the milk in the fallout areas, and the degree to which milk was stored, diluted, or diverted to non-fluid uses prior to consumption elsewhere. These data have not yet been collected on a regional basis or for the State of Utah. Reconstruction of the milk distribution and production system in Utah in the 1950's is part of the epidemiological study proposed to the NIH by the University of Utah. Thus one cannot currently predict the sizes of the population with thyroid doses of significance to the proposed bill.

It would also be useful to have the studies of thyroid dosimetry we are making under funding from the Dept. of Defense completed so that the models in current use for thyroid dose estimates from fallout can be tested. We are hopeful this will be possible, but our work will not yet let us guarantee that we will be able to do this. In addition much work extending the

offsite dosimetry supported by the Department of Energy will not mature for several years.

Thus if a compensation scheme is adopted now, it must be done with the acceptance of some great uncertainties (which can be removed in part by the proposed studies and others already underway) among them a good knowledge of the size of the population which might eventually be compensated. My own position is that the ongoing research in dosimetry should continue with high priority and with continued adequate funding and that the epidemiological research on offsite populations should be funded as soon as possible. We certainly ought to have a sound scientific study which demonstrates whether there is any significant excess cancer in the population which is liable to be radiation induced.

A related question is whether or not such compensation should be considered at doses below those which have been shown, in other studies, to be carcinogenic in man in the absence of a well accepted scientific study demonstrating effects on the exposed populations.

The NIH and the DOE, both federal agencies capable of administering such a study, are both under strong financial pressures to reduce or minimize their research in FY 83 and this makes funding particularly difficult. Perhaps the congress could assist by making more funds available for this specific research through their contribution to the Federal budgetary process.

I believe that anyone who contracted cancer with a significant probability of having been harmed by the radiation exposures from fallout should be compensated. Unfortunately, we are still grappling with reasonable methods of identifying those people. The critical level of attributable risk adopted should be left unspecified now, and a mechanism to adopt the critical level defined in the legislation. As a practical matter, the range of 10% to 50% could be specified. An example of such a mechanism would be to establish a committee consisting of qualified experts in fallout radiation dosimetry, radiobiology,

radiation epidemiology, cancer treatment (including specialists in thyroid, bone, and leukemia) legal aspects of compensation, insurance, and appropriate representatives of the general public. Alternatively the National Council on Radiation Protection and Measurements to organize and direct such a committee. This committee might operate under the aegis of the Secretary for Health and Human Services. Because the ramifications of this bill in setting precedents in other areas involving the beneficial uses of ionizing radiation are so great, this appointed committee should have sufficient resources available to conduct studies exploring these ramifications.

CROSS SECTIONS

Radioactivity in Animal Thyroids from Various Areas

TABLE 1—Radioactivity in Fresh Animal Thyroids (μCi ^{131}I per Gram of Thyroid)

Place slaughtered	Origin of animals	Species	Date	Animal number	Thyroid tissue		^{131}I standard (cpm/ μCi $\times 10^{-4}$)
					Wt. (gm)	$\mu\text{Ci/gm}$ $\times 10^4$	
A Memphis, Tenn.*	Unknown	Cattle	June 12	1	7.0	4.0	10.0
				2	11	3.0	
				3	7.7	4.4	
			June 14	4	3.5	2.3	10.0
				5	19	0.4	
				6	4.0	2.7	
				7	3.0	1.7	
				8	4.0	2.2	
				9	0.7	2.1	
B San Francisco, Calif.	West of Oklahoma	Cattle	June 16	10	10	0.60	19.9
				11	7.0	0.51	
				12	10	0.42	
				13	7.0	0.40	
				14	5.0	0.22	
				15	9.0	0.13	
				16	13	0.14	
				17	11	0.23	
				18	15	0.07	
				19	20	0.65	
C Boston, Mass.	Local (?)	Cattle	June 30	20	15	0.15	4.47
				21	13	0.07	
				22	4.0	0.07	
				23	7.0	0.11	
				24	6.7	0.06	
				25	6.8	0.23	
				26	11.5	0.19	
				27	2.8	0.28	
				28	10.5	0.11	
				29	4.0	0.20	
				30	5.2	0.15	
D Boston	Florida	Cattle	July 2	31	4.1	0.29	4.47
				32	1.7	0.40	
				33	4.7	0.55	
				34	3.7	1.30	
				35	5.5	1.34	
				36	4.3	0.72	
				37	1.7	0.16	
				38	1.0	0.68	
E Boston	Kentucky	Lambs	July 2	39	1.8	1.11	4.47
				40	0.8	0.87	
				41	1.5	0.80	
				42	1.8	0.44	
				43	2.0	0.95	
F Boston	Unknown	Sheep	July 2	44	1.7	0.06	4.47
				45	0.7	1.9	
				46	0.5	1.8	
				47-50 (pooled)	6.3	0.5	
				51-54 (pooled)	5.8	0.7	

* After 6.7 ^{131}I half-lives, thyroid activity of 4 beef cattle, slaughtered in Memphis August 4, was about 1×10^{-3} μCi ^{131}I per gm of thyroid.

By LESTER VAN MIDDLESWORTH

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The thyroids of cattle and sheep slaughtered, during the period June 12 to July 2, 1954, in Memphis, San Francisco, and Boston contained significant amounts of radioactivity with a half-life of approximately 8 days.

Methods

One lobe of the thyroid was removed from 39 freshly slaughtered beef cattle, 5 lambs, and 10 sheep. Most of the beef glands were damaged as the animals were decapitated. The intact glands averaged approximately 10 gm per lobe. The radioactive determinations were made the day the animals were slaughtered.

The lobe or fragment was weighed, inserted in a $\frac{1}{2}$ -oz ointment cup or beaker and placed as close as possible to a scintillation counter crystal. The gamma radioactivity was recorded. A counting standard was prepared from 0.1 μCi ^{131}I in a similar ointment cup of beaker. The radioactivity of the thyroid was expressed as $\mu\text{Ci/gm}$ of thyroid tissue.

Since different counting equipment was used in the three cities, a new standard was prepared for each counter. In Memphis, the standard was prepared from ^{131}I solution standardized by Abbott Laboratories. In Boston and Berkeley, the Oak Ridge calibration was accepted as correct.

Twelve grams of nonthyroid neck tissue from each of four animals were similarly counted and found to be free from detectable radioactivity. The energy of ^{131}I γ -rays was compared with that from several thyroid specimens by placing a thin lead sheet between the counter tube and sample. The half-life was determined on high counting specimens by recounting after approximately 8 days.

Data

Table 1 lists measurements made on sheep and cattle thyroid samples.

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tested in various areas of the United States.

The most radioactive specimen in group A counted 3,400 cpm or 42 times background. The average for the group was 16 times background. A 10-cm. plate absorbed 46% of the radiation from sample 3 and 47% of the I^{131} standard. After 8.3 days, the sample-3 decay factor (cpm June 12/ cpm June 20) was 0.49 (the I^{131} factor was 0.45). These data strongly suggest that the radioactivity was due to I^{131} .

The counting efficiency was greatest for the instrument used for the group B determinations. The activity ranged from 32 to 2.5 times background (total systemic plus instrumental backgrounds). Sample 18 may have contained no I^{131} .

The counting efficiency of the equipment used for groups C-F was less than that used in Berkeley or Memphis, and the background was higher.

The group C activity was 1.5-2 times background. Specimens 21, 22, and 23 may have contained no I^{131} .

The animals of group D were said to be wild range cattle. They showed more radioactivity than the animals from the Boston area: the activity was 3.5-1.5 times background. Sample 35 was tested for the radiation energy by penetration through a lead sheet: the tissue radiation showed an absorption of 25% and the I^{131} standard showed an absorption of 26%. After 8 days, only one-half of the original activity of sample 35 was present.

The lambs of group E were believed to have been raised in Kentucky; their thyroids were intact but quite small. The radioactivity was only 1.7-1.3 times background. Sample 44 may have been free of I^{131} . However, when all 7 glands were pooled and counted together, the radioactivity was 2.6 times background in the 7.7-gm sample.

Two of the lobes of group F were counted separately and the remainder in groups of 4, then all 10 were pooled and counted. The counts were 4-1.4 times background. The decay rate of the 10 pooled thyroids was the same as the I^{131} standard.

Discussion

Most of these studies were made during an interval of approximately three I^{131} half-lives. Except for group D, radioactivity was less with each successive collection. This could have been due to coincidental biological

TABLE 2—Activity Corrected for Decay

Group and species	Average observed $\mu\text{c/gm} \times 10^3$	Hypothetical $\mu\text{c/gm} \times 10^3$ (6/12/54)
A, cattle	3.4	3.4
	1.8	2.1
B, cattle	0.29	0.42
C, cattle	0.17	0.89
D, cattle	0.79	4.4
E, lambs	0.62	3.4
F, sheep	0.70	3.9

differences, coincidental differences in distribution of I^{131} , progressive radioactive decay, or a combination of factors.

To evaluate the factor of radioactive decay, Table 2 was prepared by correcting all the activities to the date of the original observation (June 12, 1954). It is not possible to conclude from these data whether or not the radioisotope was from a common source. As far as the author is aware, nuclear fission is the most likely source of this radioactivity.

If, for purposes of estimating total-body I^{131} , the following assumptions are made: (a) thyroids of the cattle contained approximately 20-90% of the total-body iodine (1), depending upon whether the average iodine intake was low or high, respectively, (b) the specific activity of all the body iodine was the same as the thyroid, and (c) the average weight of the undamaged

thyroids of group A was 20 gm, then the average body I^{131} in the cattle of group A on June 12 would have been 0.34 μc if the average carrier I^{127} intake had been low or 0.07 μc if the I^{127} intake had been relatively high. The lower amounts of I^{131} found in the other animals resulted from individual differences and from radioactive decay.

Cattle and sheep ingest large amounts of foliage of low iodide (I^{127}) content, which should result in greater accumulation of the daily dietary iodide in the thyroid of cattle than would occur in carnivorous animals.

It has been suggested (2) that up to 0.3 μc of I^{131} (maximum permissible amount) could be maintained continuously in the human body without radiation hazard. However, due to a lack of data, it is not possible to correlate the I^{131} content of human beings with that of cattle. The data presented here do not indicate a radiation hazard to human beings or to animals.

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2. Handbook 32 (National Bureau of Standards, Department of Commerce, Washington, D. C., 1953).

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Radiogold Administration

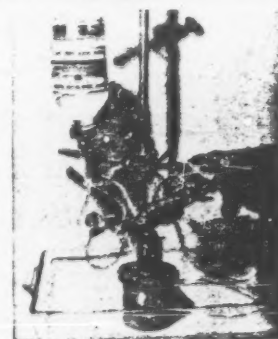
By D. L. TABERN

Department of Radioactive Pharmaceuticals
Abbott Laboratories
North Chicago, Illinois

Exactly calculated dosages of radiogold colloid, from a "single-dose" or "bulk" shipment, can be administered into the pleural and peritoneal cavities by the improved gravity-infusion method* described here.

Sterile colloid is withdrawn from the shipping vial into a $\frac{1}{2}$ -in.-lead-shielded syringe (American Cystoscope Makers, New York); radiation at the shield sur-

* D. L. Tabern, G. I. Olsson, R. G. Leitner, *NUCLEONICS* 10, No. 2, 63 (1952).



RADIOGOLD gravity-infusion set up

The CHAIRMAN. We are going to have to close the hearings at this time because I have to run to the University of Utah. We appreciate everybody's testimony. We will close the hearing at this time and move on until we come to the next hearing on this matter.

[Whereupon, at 12:47 p.m., the hearing recessed, to reconvene at the call of the Chair.]